SEQUENCE LISTING

<110> Walke, D. Wade
Hu, Yi
Nepomnichy, Boris
Turner, C. Alexander Jr
Zambrowicz, Brian

<120> Novel Human Kinases and Polynucleotides Encoding the Same

<130> LEX-0137-USA

<150> US 60/183,582
<151> 2000-02-18

<150> US 60/184,014
<151> 2000-02-22

<160> 50

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 3108
<212> DNA
<213> homo sapiens

<400> 1
atgaaaaacc tggtactgaa gataatatct ggatcttttc cacctgtgtc tttgcattat 60
tcctatgatc tccgcagttt ggtgtctcag ttatttaaaa gaaatcctag ggatagacca 120
tcagtcaact ccatattgga gaaaggtttt atagccaaac gcattgaaaa gtttctctct 180
cctcagctta ttgcagaaga attttgtcta aaaacatttt cgaagtttgg atcacagcct 240
ataccagcta aaagaccagc ttcaggacaa aactcgattt ctgttatgcc tgctcagaaa 300
attacaaagc ctgccgctaa atatggaata cctttagcat ataagaaata tggagataaa 360
aaattacacg aaaagaaacc actgcaaaaa cataaacagg cccatcaaac tccagagaag 420
agagtgaata ctggagaaga aaggaggaaa atatctgagg aagcagcaag aaagagaagg 480
ctggaattta ttgaaaaaga aaagaaacaa aaggatcaga ttattagttt aatgaaggct 540
gaacaaatga aaaggcaaga aaaggaaagg ttggaaagaa taaatagggc cagggaacaa 600
ggatggagaa atgtgctaag tgctggtgga agtggtgaag taaaggctcc ttttctgggc 660
agtggaggga ctatagctcc atcatctttt tcttctcgag gacagtatga acattaccat 720
gccatttttg accaaatgca gcaacaaaga gcagaagata atgaagctaa atggaaaaga 780
gaaatatatg gtcgaggtct tccagaaagg caaaaagggc agctagctgt agaaagagct 840
aaacaagtag aagagttcct gcagcgaaaa cgggaagcta tgcagaataa agctcgagcc 900
gaaggacata tgggaatcct gcaaaacctg gcagctatgt atggaggcag gcccagctct 960
tcaagaggag ggaagccaag aaacaaagag gaagaggttt atctggcaag actgaggcaa 1020
ataagactac agaatttcaa tgagcgccaa cagattaaag ccaaacttcg tggtgaaaag 1080
aaagaagcta atcattctga aggacaagaa ggaagtgaag aggctgacat gaggcgcaaa 1140
aaaatcgaat cactgaaggc ccatgcaaat gcacgtgctg ctgtactaaa agaacaacta 1200
gaacgaaaga gaaaggaggc ttatgagaga gaaaaaaaag tgtgggaaga gcatttggtg 1260
gctaaaggag ttaagagttc tgatgtttct ccacctttgg gacagcatga aacaggtggc 1320
tctccatcaa agcaacagat gagatctgtt atttctgtaa cttcagcttt gaaagaagtt 1380
ggcgtggaca gtagtttaac tgatacccgg gaaacttcag aagagatgca aaagaccaac 1440
aatgctattt caagtaagcg agaaatactt cgcagattaa atgaaaatct taaagctcaa 1500
gaagatgaaa aaggaatgca gaatctctct gatacttttg agataaatgt tcatgaagat 1560
gccaaagagc atgaaaaaga aaaatcagtt tcatctgatc gcaagaagtg ggaggcagga 1620
ggtcaacttg tgattcctct ggatgagtta acactagata catccttctc tacaactgaa 1680
agacatacag tgggagaagt tattaaatta ggtcctaatg gatctccaag aagagcctgg 1740
gggaaaagtc cgacagattc tgttctaaag atacttggag aagctgaact acaacttcag 1800
acagaactat tagaaaatac aactattaga agtgagattt ctcccgaagg ggaaaagtac 1860
aaacccttaa ttactggaga aaaaaaagta caatgtattt cacatgaaat aaacccatca 1920
gctattgttg attctcctgt tgagacaaaa agtcccgagt tcagtgaggc atctccacag 1980

```
atgtcattga aactggaagg aaatttagaa gaacctgatg atttggaaac agaaattcta    2040
caagagccaa gtggaacaaa caaagatgag agcttgccat gcactattac tgatgtgtgg    2100
attagtgagg aaaaagaaac aaaggaaact cagtcggcag ataggatcac cattcaggaa    2160
aatgaagttt ctgaagatgg agtctcgagt actgtggacc aacttagtga cattcatata    2220
gagcctggaa ccaatgattc tcagcactct aaatgtgatg tagataagtc tgtgcaaccg    2280
gaaccatttt tccataaggt ggttcattct gaacacttga acttagtccc tcaagttcaa    2340
tcagttcagt gttcaccaga agaatccttt gcatttcgat ctcactcgca tttaccacca    2400
aaaaataaaa acaagaattc cttgctgatt ggactttcaa ctggtctgtt tgatgcaaac    2460
aacccaaaga tgttaaggac atgttcactt ccagatctct caaagctgtt cagaaccctt    2520
atggatgttc ccaccgtagg agatgttcgt caagacaatc ttgaaataga tgaaattaaa    2580
gatgaaaaca ttaaagaagg accttctgat tctgaagaca ttgtgtttga agaaactgac    2640
acagatttac aagagctgca ggcctcgatg gaacagttac ttagggaaca acctggtgaa    2700
gaatacagtg aagaagaaga gtcagtcttg aagaacagtg atgtggagcc aactgcaaat    2760
gggacagatg tggcagatga agatgacaat cccagtagtg aaagtgccct gaacgaagaa    2820
tggcactcag ataacagtga tggtgaaatt gctagtgaat gtgaatgcga tagtgtcttt    2880
aaccatttag aggaactgag acttcatctg gagcaggaaa tgggctttga aaaattcttt    2940
gaggtttatg agaaaataaa ggctattcat gaagatgaag atgaaaatat tgaaatttgt    3000
tcaaaaatag ttcaaaatat tttgggaaat gaacatcagc atctttatgc caagattctt    3060
catttagtca tggcagatgg agcctaccaa gaagataatg atgaataa                 3108
```

<210> 2
<211> 1035
<212> PRT
<213> homo sapiens

<400> 2

```
Met Lys Asn Leu Val Leu Lys Ile Ile Ser Gly Ser Phe Pro Pro Val
 1               5                  10                  15
Ser Leu His Tyr Ser Tyr Asp Leu Arg Ser Leu Val Ser Gln Leu Phe
            20                  25                  30
Lys Arg Asn Pro Arg Asp Arg Pro Ser Val Asn Ser Ile Leu Glu Lys
        35                  40                  45
Gly Phe Ile Ala Lys Arg Ile Glu Lys Phe Leu Ser Pro Gln Leu Ile
    50                  55                  60
Ala Glu Glu Phe Cys Leu Lys Thr Phe Ser Lys Phe Gly Ser Gln Pro
65                  70                  75                  80
Ile Pro Ala Lys Arg Pro Ala Ser Gly Gln Asn Ser Ile Ser Val Met
                85                  90                  95
Pro Ala Gln Lys Ile Thr Lys Pro Ala Ala Lys Tyr Gly Ile Pro Leu
            100                 105                 110
Ala Tyr Lys Lys Tyr Gly Asp Lys Lys Leu His Glu Lys Lys Pro Leu
        115                 120                 125
Gln Lys His Lys Gln Ala His Gln Thr Pro Glu Lys Arg Val Asn Thr
    130                 135                 140
Gly Glu Glu Arg Arg Lys Ile Ser Glu Glu Ala Ala Arg Lys Arg Arg
145                 150                 155                 160
Leu Glu Phe Ile Glu Lys Glu Lys Lys Gln Lys Asp Gln Ile Ile Ser
                165                 170                 175
Leu Met Lys Ala Glu Gln Met Lys Arg Gln Glu Lys Glu Arg Leu Glu
            180                 185                 190
Arg Ile Asn Arg Ala Arg Glu Gln Gly Trp Arg Asn Val Leu Ser Ala
        195                 200                 205
Gly Gly Ser Gly Glu Val Lys Ala Pro Phe Leu Gly Ser Gly Gly Thr
    210                 215                 220
Ile Ala Pro Ser Ser Phe Ser Ser Arg Gly Gln Tyr Glu His Tyr His
225                 230                 235                 240
Ala Ile Phe Asp Gln Met Gln Gln Gln Arg Ala Glu Asp Asn Glu Ala
                245                 250                 255
Lys Trp Lys Arg Glu Ile Tyr Gly Arg Gly Leu Pro Glu Arg Gln Lys
            260                 265                 270
Gly Gln Leu Ala Val Glu Arg Ala Lys Gln Val Glu Glu Phe Leu Gln
        275                 280                 285
Arg Lys Arg Glu Ala Met Gln Asn Lys Ala Arg Ala Glu Gly His Met
```

```
    290                 295                 300
Gly Ile Leu Gln Asn Leu Ala Ala Met Tyr Gly Gly Arg Pro Ser Ser
305                 310                 315                 320
Ser Arg Gly Gly Lys Pro Arg Asn Lys Glu Glu Glu Val Tyr Leu Ala
                325                 330                 335
Arg Leu Arg Gln Ile Arg Leu Gln Asn Phe Asn Glu Arg Gln Gln Ile
            340                 345                 350
Lys Ala Lys Leu Arg Gly Glu Lys Lys Glu Ala Asn His Ser Glu Gly
        355                 360                 365
Gln Glu Gly Ser Glu Glu Ala Asp Met Arg Arg Lys Lys Ile Glu Ser
    370                 375                 380
Leu Lys Ala His Ala Asn Ala Arg Ala Ala Val Leu Lys Glu Gln Leu
385                 390                 395                 400
Glu Arg Lys Arg Lys Glu Ala Tyr Glu Arg Glu Lys Lys Val Trp Glu
                405                 410                 415
Glu His Leu Val Ala Lys Gly Val Lys Ser Ser Asp Val Ser Pro Pro
            420                 425                 430
Leu Gly Gln His Glu Thr Gly Gly Ser Pro Ser Lys Gln Gln Met Arg
        435                 440                 445
Ser Val Ile Ser Val Thr Ser Ala Leu Lys Glu Val Gly Val Asp Ser
    450                 455                 460
Ser Leu Thr Asp Thr Arg Glu Thr Ser Glu Glu Met Gln Lys Thr Asn
465                 470                 475                 480
Asn Ala Ile Ser Ser Lys Arg Glu Ile Leu Arg Arg Leu Asn Glu Asn
                485                 490                 495
Leu Lys Ala Gln Glu Asp Glu Lys Gly Met Gln Asn Leu Ser Asp Thr
            500                 505                 510
Phe Glu Ile Asn Val His Glu Asp Ala Lys Glu His Glu Lys Glu Lys
        515                 520                 525
Ser Val Ser Ser Asp Arg Lys Lys Trp Glu Ala Gly Gly Gln Leu Val
    530                 535                 540
Ile Pro Leu Asp Glu Leu Thr Leu Asp Thr Ser Phe Ser Thr Thr Glu
545                 550                 555                 560
Arg His Thr Val Gly Glu Val Ile Lys Leu Gly Pro Asn Gly Ser Pro
                565                 570                 575
Arg Arg Ala Trp Gly Lys Ser Pro Thr Asp Ser Val Leu Lys Ile Leu
            580                 585                 590
Gly Glu Ala Glu Leu Gln Leu Gln Thr Glu Leu Leu Glu Asn Thr Thr
        595                 600                 605
Ile Arg Ser Glu Ile Ser Pro Glu Gly Glu Lys Tyr Lys Pro Leu Ile
    610                 615                 620
Thr Gly Glu Lys Lys Val Gln Cys Ile Ser His Glu Ile Asn Pro Ser
625                 630                 635                 640
Ala Ile Val Asp Ser Pro Val Glu Thr Lys Ser Pro Glu Phe Ser Glu
                645                 650                 655
Ala Ser Pro Gln Met Ser Leu Lys Leu Glu Gly Asn Leu Glu Glu Pro
            660                 665                 670
Asp Asp Leu Glu Thr Glu Ile Leu Gln Glu Pro Ser Gly Thr Asn Lys
        675                 680                 685
Asp Glu Ser Leu Pro Cys Thr Ile Thr Asp Val Trp Ile Ser Glu Glu
    690                 695                 700
Lys Glu Thr Lys Glu Thr Gln Ser Ala Asp Arg Ile Thr Ile Gln Glu
705                 710                 715                 720
Asn Glu Val Ser Glu Asp Gly Val Ser Ser Thr Val Asp Gln Leu Ser
                725                 730                 735
Asp Ile His Ile Glu Pro Gly Thr Asn Asp Ser Gln His Ser Lys Cys
            740                 745                 750
Asp Val Asp Lys Ser Val Gln Pro Glu Pro Phe Phe His Lys Val Val
        755                 760                 765
His Ser Glu His Leu Asn Leu Val Pro Gln Val Gln Ser Val Gln Cys
    770                 775                 780
Ser Pro Glu Glu Ser Phe Ala Phe Arg Ser His Ser His Leu Pro Pro
785                 790                 795                 800
```

```
Lys Asn Lys Asn Lys Asn Ser Leu Leu Ile Gly Leu Ser Thr Gly Leu
                805                 810                 815
Phe Asp Ala Asn Asn Pro Lys Met Leu Arg Thr Cys Ser Leu Pro Asp
            820                 825                 830
Leu Ser Lys Leu Phe Arg Thr Leu Met Asp Val Pro Thr Val Gly Asp
        835                 840                 845
Val Arg Gln Asp Asn Leu Glu Ile Asp Glu Ile Lys Asp Glu Asn Ile
    850                 855                 860
Lys Glu Gly Pro Ser Asp Ser Glu Asp Ile Val Phe Glu Glu Thr Asp
865                 870                 875                 880
Thr Asp Leu Gln Glu Leu Gln Ala Ser Met Glu Gln Leu Leu Arg Glu
                885                 890                 895
Gln Pro Gly Glu Glu Tyr Ser Glu Glu Glu Glu Ser Val Leu Lys Asn
            900                 905                 910
Ser Asp Val Glu Pro Thr Ala Asn Gly Thr Asp Val Ala Asp Glu Asp
        915                 920                 925
Asp Asn Pro Ser Ser Glu Ser Ala Leu Asn Glu Glu Trp His Ser Asp
    930                 935                 940
Asn Ser Asp Gly Glu Ile Ala Ser Glu Cys Glu Cys Asp Ser Val Phe
945                 950                 955                 960
Asn His Leu Glu Glu Leu Arg Leu His Leu Glu Gln Glu Met Gly Phe
                965                 970                 975
Glu Lys Phe Phe Glu Val Tyr Glu Lys Ile Lys Ala Ile His Glu Asp
            980                 985                 990
Glu Asp Glu Asn Ile Glu Ile Cys Ser Lys Ile Val Gln Asn Ile Leu
        995                1000                1005
Gly Asn Glu His Gln His Leu Tyr Ala Lys Ile Leu His Leu Val Met
    1010                1015                1020
Ala Asp Gly Ala Tyr Gln Glu Asp Asn Asp Glu
1025                1030                1035
```

<210> 3
<211> 3645
<212> DNA
<213> homo sapiens

<400> 3

```
atggagaagt atgttagact acagaagatt ggagaaggtt catttggaaa agccattctt      60
gttaaatcta cagaagatgg cagacagtat gttatcaagg aaattaacat ctcaagaatg     120
tccagtaaag aaagagaaga atcaaggaga gaagttgcag tattggcaaa catgaagcat     180
ccaaatattg tccagtatag agaatcattt gaagaaaatg gctctctcta catagtaatg     240
gattactgtg agggagggga tctgtttaag cgaataaatg ctcagaaagg cgttttgttt     300
caagaggatc agattttgga ctggtttgta cagatatgtt tggccctgaa acatgtacat     360
gatagaaaaa ttcttcatcg agacattaaa tctcagaaca tatttttaac taaagatgga     420
acagtacaac ttggagattt tggaattgct agagttctta atagtactgt agagctggct     480
cgaacttgca tagggacccc atactacttg tcacctgaaa tctgtgaaaa caaaccttac     540
aataataaaa gtgacatttg ggctctgggg tgtgtccttt atgagctgtg tacacttaaa     600
catgcttttg aagctggcag tatgaaaaac ctggtactga agataatatc tggatctttt     660
ccacctgtgt ctttgcatta ttcctatgat ctccgcagtt tggtgtctca gttatttaaa     720
agaaatccta gggatagacc atcagtcaac tccatattgg agaaaggttt tatagccaaa     780
cgcattgaaa agtttctctc tcctcagctt attgcagaag aattttgtct aaaaacattt     840
tcgaagtttg gatcacagcc tataccagct aaaagaccag cttcaggaca aaactcgatt     900
tctgttatgc ctgctcagaa aattacaaag cctgccgcta aatatggaat acctttagca     960
tataagaaat atggagataa aaaattacac gaaaagaaac cactgcaaaa acataaacag    1020
gcccatcaaa ctccagagaa gagagtgaat actggagaag aaaggaggaa aatatctgag    1080
gaagcagcaa gaaagagaag gctggaattt attgaaaaag aaaagaaaca aaaggatcag    1140
attattagtt taatgaaggc tgaacaaatg aaaaggcaag aaaaggaaag gttggaaaga    1200
ataaataggg ccagggaaca aggatggaga aatgtgctaa gtgctggtgg aagtggtgaa    1260
gtaaaggctc cttttctggg cagtggaggg actatagctc catcatcttt ttcttctcga    1320
ggacagtatg aacattacca tgccattttt gaccaaatgc agcaacaaag agcagaagat    1380
aatgaagcta aatggaaaag agaaatatat ggtcgaggtc ttccagaaag gcaaaaaggg    1440
cagctagctg tagaaagagc taaacaagta gaagagttcc tgcagcgaaa acgggaagct    1500
atgcagaata aagctcgagc cgaaggacat atggtttatc tggcaagact gaggcaaata    1560
```

```
agactacaga atttcaatga gcgccaacag attaaagcca aacttcgtgg tgaaaagaaa    1620
gaagctaatc attctgaagg acaagaagga agtgaagagg ctgacatgag gcgcaaaaaa    1680
atcgaatcac tgaaggccca tgcaaatgca cgtgctgctg tactaaaaga acaactagaa    1740
cgaaagagaa aggaggctta tgagagagaa aaaaaagtgt gggaagagca tttggtggct    1800
aaaggagtta agagttctga tgtttctcca cctttgggac agcatgaaac aggtggctct    1860
ccatcaaagc aacagatgag atctgttatt tctgtaactt cagctttgaa agaagttggc    1920
gtggacagta gtttaactga tacccgggaa acttcagaag agatgcaaaa gaccaacaat    1980
gctatttcaa gtaagcgaga aatacttcgc agattaaatg aaaatcttaa agctcaagaa    2040
gatgaaaaag gaatgcagaa tctctctgat acttttgaga taaatgttca tgaagatgcc    2100
aaagagcatg aaaaagaaaa atcagtttca tctgatcgca agaagtggga ggcaggaggt    2160
caacttgtga ttcctctgga tgagttaaca ctagatacat ccttctctac aactgaaaga    2220
catacagtgg gagaagttat taaattaggt cctaatggat ctccaagaag agcctggggg    2280
aaaagtccga cagattctgt tctaaagata cttggagaag ctgaactaca acttcagaca    2340
gaactattag aaaatacaac tattagaagt gagatttctc ccgaagggga aaagtacaaa    2400
cccttaatta ctggagaaaa aaaagtacaa tgtatttcac atgaaataaa cccatcagct    2460
attgttgatt ctcctgttga gacaaaaagt cccgagttca gtgaggcatc tccacagatg    2520
tcattgaaac tggaaggaaa tttagaagaa cctgatgatt tggaaacaga aattctacaa    2580
gagccaagtg gaacaaacaa agatgagagc ttgccatgca ctattactga tgtgtggatt    2640
agtgaggaaa aagaaacaaa ggaaactcag tcggcagata ggatcaccat tcaggaaaat    2700
gaagtttctg aagatggagt ctcgagtact gtggaccaac ttagtgacat tcatatagag    2760
cctggaacca atgattctca gcactctaaa tgtgatgtag ataagtctgt gcaaccggaa    2820
ccatttttcc ataaggtggt tcattctgaa cacttgaact tagtccctca agttcaatca    2880
gttcagtgtt caccagaaga atcctttgca tttcgatctc actcgcattt accaccaaaa    2940
aataaaaaca agaattcctt gctgattgga ctttcaactg gtctgtttga tgcaaacaac    3000
ccaaagatgt taaggacatg ttcacttcca gatctctcaa agctgttcag aacccttatg    3060
gatgttccca ccgtaggaga tgttcgtcaa gacaatcttg aaatagatga aattaaagat    3120
gaaaacatta aagaaggacc ttctgattct gaagacattg tgtttgaaga aactgacaca    3180
gatttacaag agctgcaggc ctcgatggaa cagttactta gggaacaacc tggtgaagaa    3240
tacagtgaag aagaagagtc agtcttgaag aacagtgatg tggagccaac tgcaaatggg    3300
acagatgtgg cagatgaaga tgacaatccc agtagtgaaa gtgccctgaa cgaagaatgg    3360
cactcagata acagtgatgg tgaaattgct agtgaatgtg aatgcgatag tgtctttaac    3420
catttagagg aactgagact tcatctggag caggaaatgg gctttgaaaa attctttgag    3480
gtttatgaga aaataaaggc tattcatgaa gatgaagatg aaaatattga aatttgttca    3540
aaaatagttc aaaatatttt gggaaatgaa catcagcatc tttatgccaa gattcttcat    3600
ttagtcatgg cagatggagc ctaccaagaa gataatgatg aataa                    3645
```

<210> 4
<211> 1214
<212> PRT
<213> homo sapiens

<400> 4

```
Met Glu Lys Tyr Val Arg Leu Gln Lys Ile Gly Glu Gly Ser Phe Gly
 1               5                  10                  15
Lys Ala Ile Leu Val Lys Ser Thr Glu Asp Gly Arg Gln Tyr Val Ile
            20                  25                  30
Lys Glu Ile Asn Ile Ser Arg Met Ser Ser Lys Glu Arg Glu Glu Ser
        35                  40                  45
Arg Arg Glu Val Ala Val Leu Ala Asn Met Lys His Pro Asn Ile Val
    50                  55                  60
Gln Tyr Arg Glu Ser Phe Glu Glu Asn Gly Ser Leu Tyr Ile Val Met
65                  70                  75                  80
Asp Tyr Cys Glu Gly Gly Asp Leu Phe Lys Arg Ile Asn Ala Gln Lys
                85                  90                  95
Gly Val Leu Phe Gln Glu Asp Gln Ile Leu Asp Trp Phe Val Gln Ile
            100                 105                 110
Cys Leu Ala Leu Lys His Val His Asp Arg Lys Ile Leu His Arg Asp
        115                 120                 125
Ile Lys Ser Gln Asn Ile Phe Leu Thr Lys Asp Gly Thr Val Gln Leu
    130                 135                 140
Gly Asp Phe Gly Ile Ala Arg Val Leu Asn Ser Thr Val Glu Leu Ala
145                 150                 155                 160
Arg Thr Cys Ile Gly Thr Pro Tyr Tyr Leu Ser Pro Glu Ile Cys Glu
```

```
                165                 170                 175
Asn Lys Pro Tyr Asn Asn Lys Ser Asp Ile Trp Ala Leu Gly Cys Val
            180                 185                 190
Leu Tyr Glu Leu Cys Thr Leu Lys His Ala Phe Glu Ala Gly Ser Met
        195                 200                 205
Lys Asn Leu Val Leu Lys Ile Ile Ser Gly Ser Phe Pro Pro Val Ser
    210                 215                 220
Leu His Tyr Ser Tyr Asp Leu Arg Ser Leu Val Ser Gln Leu Phe Lys
225                 230                 235                 240
Arg Asn Pro Arg Asp Arg Pro Ser Val Asn Ser Ile Leu Glu Lys Gly
                245                 250                 255
Phe Ile Ala Lys Arg Ile Glu Lys Phe Leu Ser Pro Gln Leu Ile Ala
            260                 265                 270
Glu Glu Phe Cys Leu Lys Thr Phe Ser Lys Phe Gly Ser Gln Pro Ile
        275                 280                 285
Pro Ala Lys Arg Pro Ala Ser Gly Gln Asn Ser Ile Ser Val Met Pro
    290                 295                 300
Ala Gln Lys Ile Thr Lys Pro Ala Ala Lys Tyr Gly Ile Pro Leu Ala
305                 310                 315                 320
Tyr Lys Lys Tyr Gly Asp Lys Lys Leu His Glu Lys Lys Pro Leu Gln
                325                 330                 335
Lys His Lys Gln Ala His Gln Thr Pro Glu Lys Arg Val Asn Thr Gly
            340                 345                 350
Glu Glu Arg Arg Lys Ile Ser Glu Glu Ala Ala Arg Lys Arg Arg Leu
        355                 360                 365
Glu Phe Ile Glu Lys Glu Lys Lys Gln Lys Asp Gln Ile Ile Ser Leu
    370                 375                 380
Met Lys Ala Glu Gln Met Lys Arg Gln Glu Lys Glu Arg Leu Glu Arg
385                 390                 395                 400
Ile Asn Arg Ala Arg Glu Gln Gly Trp Arg Asn Val Leu Ser Ala Gly
                405                 410                 415
Gly Ser Gly Glu Val Lys Ala Pro Phe Leu Gly Ser Gly Gly Thr Ile
            420                 425                 430
Ala Pro Ser Ser Phe Ser Ser Arg Gly Gln Tyr Glu His Tyr His Ala
        435                 440                 445
Ile Phe Asp Gln Met Gln Gln Gln Arg Ala Glu Asp Asn Glu Ala Lys
    450                 455                 460
Trp Lys Arg Glu Ile Tyr Gly Arg Gly Leu Pro Glu Arg Gln Lys Gly
465                 470                 475                 480
Gln Leu Ala Val Glu Arg Ala Lys Gln Val Glu Glu Phe Leu Gln Arg
                485                 490                 495
Lys Arg Glu Ala Met Gln Asn Lys Ala Arg Ala Glu Gly His Met Val
            500                 505                 510
Tyr Leu Ala Arg Leu Arg Gln Ile Arg Leu Gln Asn Phe Asn Glu Arg
        515                 520                 525
Gln Gln Ile Lys Ala Lys Leu Arg Gly Glu Lys Lys Glu Ala Asn His
    530                 535                 540
Ser Glu Gly Gln Glu Gly Ser Glu Glu Ala Asp Met Arg Arg Lys Lys
545                 550                 555                 560
Ile Glu Ser Leu Lys Ala His Ala Asn Ala Arg Ala Ala Val Leu Lys
                565                 570                 575
Glu Gln Leu Glu Arg Lys Arg Lys Glu Ala Tyr Glu Arg Glu Lys Lys
            580                 585                 590
Val Trp Glu Glu His Leu Val Ala Lys Gly Val Lys Ser Ser Asp Val
        595                 600                 605
Ser Pro Pro Leu Gly Gln His Glu Thr Gly Gly Ser Pro Ser Lys Gln
    610                 615                 620
Gln Met Arg Ser Val Ile Ser Val Thr Ser Ala Leu Lys Glu Val Gly
625                 630                 635                 640
Val Asp Ser Ser Leu Thr Asp Thr Arg Glu Thr Ser Glu Glu Met Gln
                645                 650                 655
Lys Thr Asn Asn Ala Ile Ser Ser Lys Arg Glu Ile Leu Arg Arg Leu
            660                 665                 670
```

Asn Glu Asn Leu Lys Ala Gln Glu Asp Glu Lys Gly Met Gln Asn Leu
675 680 685
Ser Asp Thr Phe Glu Ile Asn Val His Glu Asp Ala Lys Glu His Glu
690 695 700
Lys Glu Lys Ser Val Ser Ser Asp Arg Lys Lys Trp Glu Ala Gly Gly
705 710 715 720
Gln Leu Val Ile Pro Leu Asp Glu Leu Thr Leu Asp Thr Ser Phe Ser
725 730 735
Thr Thr Glu Arg His Thr Val Gly Glu Val Ile Lys Leu Gly Pro Asn
740 745 750
Gly Ser Pro Arg Arg Ala Trp Gly Lys Ser Pro Thr Asp Ser Val Leu
755 760 765
Lys Ile Leu Gly Glu Ala Glu Leu Gln Leu Gln Thr Glu Leu Leu Glu
770 775 780
Asn Thr Thr Ile Arg Ser Glu Ile Ser Pro Glu Gly Glu Lys Tyr Lys
785 790 795 800
Pro Leu Ile Thr Gly Glu Lys Lys Val Gln Cys Ile Ser His Glu Ile
805 810 815
Asn Pro Ser Ala Ile Val Asp Ser Pro Val Glu Thr Lys Ser Pro Glu
820 825 830
Phe Ser Glu Ala Ser Pro Gln Met Ser Leu Lys Leu Glu Gly Asn Leu
835 840 845
Glu Glu Pro Asp Asp Leu Glu Thr Glu Ile Leu Gln Glu Pro Ser Gly
850 855 860
Thr Asn Lys Asp Glu Ser Leu Pro Cys Thr Ile Thr Asp Val Trp Ile
865 870 875 880
Ser Glu Glu Lys Glu Thr Lys Glu Thr Gln Ser Ala Asp Arg Ile Thr
885 890 895
Ile Gln Glu Asn Glu Val Ser Glu Asp Gly Val Ser Ser Thr Val Asp
900 905 910
Gln Leu Ser Asp Ile His Ile Glu Pro Gly Thr Asn Asp Ser Gln His
915 920 925
Ser Lys Cys Asp Val Asp Lys Ser Val Gln Pro Glu Pro Phe Phe His
930 935 940
Lys Val Val His Ser Glu His Leu Asn Leu Val Pro Gln Val Gln Ser
945 950 955 960
Val Gln Cys Ser Pro Glu Glu Ser Phe Ala Phe Arg Ser His Ser His
965 970 975
Leu Pro Pro Lys Asn Lys Asn Lys Asn Ser Leu Leu Ile Gly Leu Ser
980 985 990
Thr Gly Leu Phe Asp Ala Asn Asn Pro Lys Met Leu Arg Thr Cys Ser
995 1000 1005
Leu Pro Asp Leu Ser Lys Leu Phe Arg Thr Leu Met Asp Val Pro Thr
1010 1015 1020
Val Gly Asp Val Arg Gln Asp Asn Leu Glu Ile Asp Glu Ile Lys Asp
1025 1030 1035 1040
Glu Asn Ile Lys Glu Gly Pro Ser Asp Ser Glu Asp Ile Val Phe Glu
1045 1050 1055
Glu Thr Asp Thr Asp Leu Gln Glu Leu Gln Ala Ser Met Glu Gln Leu
1060 1065 1070
Leu Arg Glu Gln Pro Gly Glu Glu Tyr Ser Glu Glu Glu Glu Ser Val
1075 1080 1085
Leu Lys Asn Ser Asp Val Glu Pro Thr Ala Asn Gly Thr Asp Val Ala
1090 1095 1100
Asp Glu Asp Asp Asn Pro Ser Ser Glu Ser Ala Leu Asn Glu Glu Trp
1105 1110 1115 1120
His Ser Asp Asn Ser Asp Gly Glu Ile Ala Ser Glu Cys Glu Cys Asp
1125 1130 1135
Ser Val Phe Asn His Leu Glu Glu Leu Arg Leu His Leu Glu Gln Glu
1140 1145 1150
Met Gly Phe Glu Lys Phe Phe Glu Val Tyr Glu Lys Ile Lys Ala Ile
1155 1160 1165
His Glu Asp Glu Asp Glu Asn Ile Glu Ile Cys Ser Lys Ile Val Gln

```
    1170                1175                1180
Asn Ile Leu Gly Asn Glu His Gln His Leu Tyr Ala Lys Ile Leu His
1185                1190                1195                1200
Leu Val Met Ala Asp Gly Ala Tyr Gln Glu Asp Asn Asp Glu
                1205                1210
```

<210> 5
<211> 3024
<212> DNA
<213> homo sapiens

<400> 5

```
atgaaaaacc tggtactgaa gataatatct ggatcttttc cacctgtgtc tttgcattat      60
tcctatgatc tccgcagttt ggtgtctcag ttatttaaaa gaaatcctag ggatagacca     120
tcagtcaact ccatattgga gaaaggtttt atagccaaac gcattgaaaa gtttctctct     180
cctcagctta ttgcagaaga attttgtcta aaaacatttt cgaagtttgg atcacagcct     240
ataccagcta aaagaccagc ttcaggacaa aactcgattt ctgttatgcc tgctcagaaa     300
attacaaagc ctgccgctaa atatggaata cctttagcat ataagaaata tggagataaa     360
aaattacacg aaaagaaacc actgcaaaaa cataaacagg cccatcaaac tccagagaag     420
agagtgaata ctggagaaga aaggaggaaa atatctgagg aagcagcaag aaagagaagg     480
ctggaattta ttgaaaaaga aaagaaacaa aaggatcaga ttattagttt aatgaaggct     540
gaacaaatga aaaggcaaga aaaggaaagg ttggaaagaa taaatagggc cagggaacaa     600
ggatggagaa atgtgctaag tgctggtgga agtggtgaag taaaggctcc ttttctgggc     660
agtggaggga ctatagctcc atcatctttt tcttctcgag gacagtatga acattaccat     720
gccatttttg accaaatgca gcaacaaaga gcagaagata atgaagctaa atggaaaaga     780
gaaatatatg gtcgaggtct tccagaaagg caaaaagggc agctagctgt agaaagagct     840
aaacaagtag aagagttcct gcagcgaaaa cgggaagcta tgcagaataa agctcgagcc     900
gaaggacata tggtttatct ggcaagactg aggcaaataa gactacagaa tttcaatgag     960
cgccaacaga ttaaagccaa acttcgtggt gaaaagaaag aagctaatca ttctgaagga    1020
caagaaggaa gtgaagaggc tgacatgagg cgcaaaaaaa tcgaatcact gaaggcccat    1080
gcaaatgcac gtgctgctgt actaaaagaa caactagaac gaaagagaaa ggaggcttat    1140
gagagagaaa aaaaagtgtg ggaagagcat ttggtggcta aaggagttaa gagttctgat    1200
gtttctccac ctttgggaca gcatgaaaca ggtggctctc catcaaagca acagatgaga    1260
tctgttattt ctgtaacttc agctttgaaa gaagttggcg tggacagtag tttaactgat    1320
acccgggaaa cttcagaaga gatgcaaaag accaacaatg ctatttcaag taagcgagaa    1380
atacttcgca gattaaatga aaatcttaaa gctcaagaag atgaaaaagg aatgcagaat    1440
ctctctgata cttttgagat aaatgttcat gaagatgcca aagagcatga aaaagaaaaa    1500
tcagtttcat ctgatcgcaa gaagtgggag gcaggaggtc aacttgtgat tcctctggat    1560
gagttaacac tagatacatc cttctctaca actgaaagac atacagtggg agaagttatt    1620
aaattaggtc ctaatggatc tccaagaaga gcctggggga aaagtccgac agattctgtt    1680
ctaaagatac ttggagaagc tgaactacaa cttcagacag aactattaga aaatacaact    1740
attagaagtg agatttctcc cgaaggggaa aagtacaaac ccttaattac tggagaaaaa    1800
aaagtacaat gtatttcaca tgaaataaac ccatcagcta ttgttgattc tcctgttgag    1860
acaaaaagtc ccgagttcag tgaggcatct ccacagatgt cattgaaact ggaaggaaat    1920
ttagaagaac ctgatgattt ggaaacagaa attctacaag agccaagtgg aacaaacaaa    1980
gatgagagct tgccatgcac tattactgat gtgtggatta gtgaggaaaa agaaacaaag    2040
gaaactcagt cggcagatag gatcaccatt caggaaaatg aagtttctga agatggagtc    2100
tcgagtactg tggaccaact tagtgacatt catatagagc ctggaaccaa tgattctcag    2160
cactctaaat gtgatgtaga taagtctgtg caaccggaac catttttcca taaggtggtt    2220
cattctgaac acttgaactt agtccctcaa gttcaatcag ttcagtgttc accagaagaa    2280
tcctttgcat ttcgatctca ctcgcattta ccaccaaaaa ataaaaacaa gaattccttg    2340
ctgattggac tttcaactgg tctgtttgat gcaaacaacc caaagatgtt aaggacatgt    2400
tcacttccag atctctcaaa gctgttcaga acccttatgg atgttcccac cgtaggagat    2460
gttcgtcaag acaatcttga aatagatgaa attaaagatg aaaacattaa agaaggacct    2520
tctgattctg aagacattgt gtttgaagaa actgacacag atttacaaga gctgcaggcc    2580
tcgatggaac agttacttag ggaacaacct ggtgaagaat acagtgaaga agaagagtca    2640
gtcttgaaga acagtgatgt ggagccaact gcaaatggga cagatgtggc agatgaagat    2700
gacaatccca gtagtgaaag tgccctgaac gaagaatggc actcagataa cagtgatggt    2760
gaaattgcta gtgaatgtga atgcgatagt gtctttaacc atttagagga actgagactt    2820
catctggagc aggaaatggg ctttgaaaaa ttctttgagg tttatgagaa aataaaggct    2880
attcatgaag atgaagatga aaatattgaa atttgttcaa aaatagttca aaatattttg    2940
ggaaatgaac atcagcatct ttatgccaag attcttcatt tagtcatggc agatggagcc    3000
taccaagaag ataatgatga ataa                                           3024
```

<210> 6
<211> 1007
<212> PRT
<213> homo sapiens

<400> 6
Met Lys Asn Leu Val Leu Lys Ile Ile Ser Gly Ser Phe Pro Pro Val
 1   5   10   15
Ser Leu His Tyr Ser Tyr Asp Leu Arg Ser Leu Val Ser Gln Leu Phe
            20   25   30
Lys Arg Asn Pro Arg Asp Arg Pro Ser Val Asn Ser Ile Leu Glu Lys
        35   40   45
Gly Phe Ile Ala Lys Arg Ile Glu Lys Phe Leu Ser Pro Gln Leu Ile
    50   55   60
Ala Glu Glu Phe Cys Leu Lys Thr Phe Ser Lys Phe Gly Ser Gln Pro
65   70   75   80
Ile Pro Ala Lys Arg Pro Ala Ser Gly Gln Asn Ser Ile Ser Val Met
                85   90   95
Pro Ala Gln Lys Ile Thr Lys Pro Ala Ala Lys Tyr Gly Ile Pro Leu
            100   105   110
Ala Tyr Lys Lys Tyr Gly Asp Lys Lys Leu His Glu Lys Lys Pro Leu
        115   120   125
Gln Lys His Lys Gln Ala His Gln Thr Pro Glu Lys Arg Val Asn Thr
    130   135   140
Gly Glu Glu Arg Arg Lys Ile Ser Glu Glu Ala Ala Arg Lys Arg Arg
145   150   155   160
Leu Glu Phe Ile Glu Lys Glu Lys Lys Gln Lys Asp Gln Ile Ile Ser
                165   170   175
Leu Met Lys Ala Glu Gln Met Lys Arg Gln Glu Lys Glu Arg Leu Glu
            180   185   190
Arg Ile Asn Arg Ala Arg Glu Gln Gly Trp Arg Asn Val Leu Ser Ala
        195   200   205
Gly Gly Ser Gly Glu Val Lys Ala Pro Phe Leu Gly Ser Gly Gly Thr
    210   215   220
Ile Ala Pro Ser Ser Phe Ser Ser Arg Gly Gln Tyr Glu His Tyr His
225   230   235   240
Ala Ile Phe Asp Gln Met Gln Gln Gln Arg Ala Glu Asp Asn Glu Ala
                245   250   255
Lys Trp Lys Arg Glu Ile Tyr Gly Arg Gly Leu Pro Glu Arg Gln Lys
            260   265   270
Gly Gln Leu Ala Val Glu Arg Ala Lys Gln Val Glu Glu Phe Leu Gln
        275   280   285
Arg Lys Arg Glu Ala Met Gln Asn Lys Ala Arg Ala Glu Gly His Met
    290   295   300
Val Tyr Leu Ala Arg Leu Arg Gln Ile Arg Leu Gln Asn Phe Asn Glu
305   310   315   320
Arg Gln Gln Ile Lys Ala Lys Leu Arg Gly Glu Lys Lys Glu Ala Asn
                325   330   335
His Ser Glu Gly Gln Glu Gly Ser Glu Glu Ala Asp Met Arg Arg Lys
            340   345   350
Lys Ile Glu Ser Leu Lys Ala His Ala Asn Ala Arg Ala Ala Val Leu
        355   360   365
Lys Glu Gln Leu Glu Arg Lys Arg Lys Glu Ala Tyr Glu Arg Glu Lys
    370   375   380
Lys Val Trp Glu Glu His Leu Val Ala Lys Gly Val Lys Ser Ser Asp
385   390   395   400
Val Ser Pro Pro Leu Gly Gln His Glu Thr Gly Gly Ser Pro Ser Lys
                405   410   415
Gln Gln Met Arg Ser Val Ile Ser Val Thr Ser Ala Leu Lys Glu Val
            420   425   430
Gly Val Asp Ser Ser Leu Thr Asp Thr Arg Glu Thr Ser Glu Glu Met
        435   440   445
Gln Lys Thr Asn Asn Ala Ile Ser Ser Lys Arg Glu Ile Leu Arg Arg

```
    450                 455                 460
Leu Asn Glu Asn Leu Lys Ala Gln Glu Asp Glu Lys Gly Met Gln Asn
465                 470                 475                 480
Leu Ser Asp Thr Phe Glu Ile Asn Val His Glu Asp Ala Lys Glu His
                485                 490                 495
Glu Lys Glu Lys Ser Val Ser Ser Asp Arg Lys Lys Trp Glu Ala Gly
            500                 505                 510
Gly Gln Leu Val Ile Pro Leu Asp Glu Leu Thr Leu Asp Thr Ser Phe
        515                 520                 525
Ser Thr Thr Glu Arg His Thr Val Gly Glu Val Ile Lys Leu Gly Pro
    530                 535                 540
Asn Gly Ser Pro Arg Arg Ala Trp Gly Lys Ser Pro Thr Asp Ser Val
545                 550                 555                 560
Leu Lys Ile Leu Gly Glu Ala Glu Leu Gln Leu Gln Thr Glu Leu Leu
                565                 570                 575
Glu Asn Thr Thr Ile Arg Ser Glu Ile Ser Pro Glu Gly Glu Lys Tyr
            580                 585                 590
Lys Pro Leu Ile Thr Gly Glu Lys Lys Val Gln Cys Ile Ser His Glu
        595                 600                 605
Ile Asn Pro Ser Ala Ile Val Asp Ser Pro Val Glu Thr Lys Ser Pro
    610                 615                 620
Glu Phe Ser Glu Ala Ser Pro Gln Met Ser Leu Lys Leu Glu Gly Asn
625                 630                 635                 640
Leu Glu Glu Pro Asp Asp Leu Glu Thr Glu Ile Leu Gln Glu Pro Ser
                645                 650                 655
Gly Thr Asn Lys Asp Glu Ser Leu Pro Cys Thr Ile Thr Asp Val Trp
            660                 665                 670
Ile Ser Glu Glu Lys Glu Thr Lys Glu Thr Gln Ser Ala Asp Arg Ile
        675                 680                 685
Thr Ile Gln Glu Asn Glu Val Ser Glu Asp Gly Val Ser Ser Thr Val
    690                 695                 700
Asp Gln Leu Ser Asp Ile His Ile Glu Pro Gly Thr Asn Asp Ser Gln
705                 710                 715                 720
His Ser Lys Cys Asp Val Asp Lys Ser Val Gln Pro Glu Pro Phe Phe
                725                 730                 735
His Lys Val Val His Ser Glu His Leu Asn Leu Val Pro Gln Val Gln
            740                 745                 750
Ser Val Gln Cys Ser Pro Glu Glu Ser Phe Ala Phe Arg Ser His Ser
        755                 760                 765
His Leu Pro Pro Lys Asn Lys Asn Lys Asn Ser Leu Leu Ile Gly Leu
    770                 775                 780
Ser Thr Gly Leu Phe Asp Ala Asn Asn Pro Lys Met Leu Arg Thr Cys
785                 790                 795                 800
Ser Leu Pro Asp Leu Ser Lys Leu Phe Arg Thr Leu Met Asp Val Pro
                805                 810                 815
Thr Val Gly Asp Val Arg Gln Asp Asn Leu Glu Ile Asp Glu Ile Lys
            820                 825                 830
Asp Glu Asn Ile Lys Glu Gly Pro Ser Asp Ser Glu Asp Ile Val Phe
        835                 840                 845
Glu Glu Thr Asp Thr Asp Leu Gln Glu Leu Gln Ala Ser Met Glu Gln
    850                 855                 860
Leu Leu Arg Glu Gln Pro Gly Glu Glu Tyr Ser Glu Glu Glu Glu Ser
865                 870                 875                 880
Val Leu Lys Asn Ser Asp Val Glu Pro Thr Ala Asn Gly Thr Asp Val
                885                 890                 895
Ala Asp Glu Asp Asp Asn Pro Ser Ser Glu Ser Ala Leu Asn Glu Glu
            900                 905                 910
Trp His Ser Asp Asn Ser Asp Gly Glu Ile Ala Ser Glu Cys Glu Cys
        915                 920                 925
Asp Ser Val Phe Asn His Leu Glu Glu Leu Arg Leu His Leu Glu Gln
    930                 935                 940
Glu Met Gly Phe Glu Lys Phe Phe Glu Val Tyr Glu Lys Ile Lys Ala
945                 950                 955                 960
```

```
Ile His Glu Asp Glu Asp Glu Asn Ile Glu Ile Cys Ser Lys Ile Val
                965                 970                 975
Gln Asn Ile Leu Gly Asn Glu His Gln His Leu Tyr Ala Lys Ile Leu
            980                 985                 990
His Leu Val Met Ala Asp Gly Ala Tyr Gln Glu Asp Asn Asp Glu
        995                 1000                1005
```

<210> 7
<211> 891
<212> DNA
<213> homo sapiens

<400> 7

```
atgccagctt tgtcaacggg atctgggagt gacactggtc tgtatgagct gttggctgct      60
ctgccagccc agctgcagcc acatgtggat agccaggaag acctgacctt cctctgggat     120
atgtttggtg aaaaaagcct gcattcattg gtaaagattc atgaaaaact acactactat     180
gagaagcaga gtccggtgcc cattctccat ggtgcggcgg ccttggccga tgatctggcc     240
gaagagcttc agaacaagcc attaaacagt gagatcagag agctgttgaa actactgtca     300
aaacccaatg tgaaggcttt gctctctgta catgatactg tggctcagaa gaattacgac     360
ccagtgttgc ctcctatgcc tgaagatatt gacgatgagg aagactcagt aaaaataatc     420
cgtctggtca aaaatagaga accactggga gctaccatta agaaggatga acagaccggg     480
gcgatcattg tggccagaat catgagagga ggagctgcag atagaagtgg tcttattcat     540
gttggtgatg aacttaggga agtcaacggg ataccagtgg aggataaaag gcctgaggaa     600
ataatacaga ttttggctca gtctcaggga gcaattacat ttaagattat acccggcagc     660
aaagaggaga caccatcaaa agaaggcaag atgtttatca aagccctctt tgactataat     720
cctaatgagg ataaggcaat tccatgtaag gaagctgggc tttctttcaa aaagggagat     780
attcttcaga ttatgagcca agatgatgca acttggtggc aagcgaaaca cgaagctgat     840
gccaacccca gggcaggctt gatcccctca aagcatttcc aggaaaggtg a               891
```

<210> 8
<211> 296
<212> PRT
<213> homo sapiens

<400> 8

```
Met Pro Ala Leu Ser Thr Gly Ser Gly Ser Asp Thr Gly Leu Tyr Glu
 1               5                  10                  15
Leu Leu Ala Ala Leu Pro Ala Gln Leu Gln Pro His Val Asp Ser Gln
            20                  25                  30
Glu Asp Leu Thr Phe Leu Trp Asp Met Phe Gly Glu Lys Ser Leu His
        35                  40                  45
Ser Leu Val Lys Ile His Glu Lys Leu His Tyr Tyr Glu Lys Gln Ser
    50                  55                  60
Pro Val Pro Ile Leu His Gly Ala Ala Ala Leu Ala Asp Asp Leu Ala
65                  70                  75                  80
Glu Glu Leu Gln Asn Lys Pro Leu Asn Ser Glu Ile Arg Glu Leu Leu
                85                  90                  95
Lys Leu Leu Ser Lys Pro Asn Val Lys Ala Leu Leu Ser Val His Asp
            100                 105                 110
Thr Val Ala Gln Lys Asn Tyr Asp Pro Val Leu Pro Pro Met Pro Glu
        115                 120                 125
Asp Ile Asp Asp Glu Glu Asp Ser Val Lys Ile Ile Arg Leu Val Lys
    130                 135                 140
Asn Arg Glu Pro Leu Gly Ala Thr Ile Lys Lys Asp Glu Gln Thr Gly
145                 150                 155                 160
Ala Ile Ile Val Ala Arg Ile Met Arg Gly Gly Ala Ala Asp Arg Ser
                165                 170                 175
Gly Leu Ile His Val Gly Asp Glu Leu Arg Glu Val Asn Gly Ile Pro
            180                 185                 190
Val Glu Asp Lys Arg Pro Glu Glu Ile Ile Gln Ile Leu Ala Gln Ser
        195                 200                 205
Gln Gly Ala Ile Thr Phe Lys Ile Ile Pro Gly Ser Lys Glu Glu Thr
```

```
    210                 215                 220
Pro Ser Lys Glu Gly Lys Met Phe Ile Lys Ala Leu Phe Asp Tyr Asn
225                 230                 235                 240
Pro Asn Glu Asp Lys Ala Ile Pro Cys Lys Glu Ala Gly Leu Ser Phe
                245                 250                 255
Lys Lys Gly Asp Ile Leu Gln Ile Met Ser Gln Asp Asp Ala Thr Trp
            260                 265                 270
Trp Gln Ala Lys His Glu Ala Asp Ala Asn Pro Arg Ala Gly Leu Ile
        275                 280                 285
Pro Ser Lys His Phe Gln Glu Arg
    290                 295
```

<210> 9
<211> 219
<212> DNA
<213> homo sapiens

<400> 9
atgaaacttt tcttccagat gtttatcaaa gccctctttg actataatcc taatgaggat 60
aaggcaattc catgtaagga agctgggctt tctttcaaaa agggagatat tcttcagatt 120
atgagccaag atgatgcaac ttggtggcaa gcgaaacacg aagctgatgc caaccccagg 180
gcaggcttga tcccctcaaa gcatttccag gaaaggtga 219

<210> 10
<211> 72
<212> PRT
<213> homo sapiens

<400> 10
```
Met Lys Leu Phe Phe Gln Met Phe Ile Lys Ala Leu Phe Asp Tyr Asn
 1               5                  10                  15
Pro Asn Glu Asp Lys Ala Ile Pro Cys Lys Glu Ala Gly Leu Ser Phe
            20                  25                  30
Lys Lys Gly Asp Ile Leu Gln Ile Met Ser Gln Asp Asp Ala Thr Trp
        35                  40                  45
Trp Gln Ala Lys His Glu Ala Asp Ala Asn Pro Arg Ala Gly Leu Ile
    50                  55                  60
Pro Ser Lys His Phe Gln Glu Arg
65                  70
```

<210> 11
<211> 957
<212> DNA
<213> homo sapiens

<400> 11
atgccagctt tgtcaacggg atctgggagt gacactggtc tgtatgagct gttggctgct 60
ctgccagccc agctgcagcc acatgtggat agccaggaag acctgacctt cctctgggat 120
atgtttggtg aaaaaagcct gcattcattg gtaaagattc atgaaaaact acactactat 180
gagaagcaga gtccggtgcc cattctccat ggtgcggcgg ccttggccga tgatctggcc 240
gaagagcttc agaacaagcc attaaacagt gagatcagag agctgttgaa actactgtca 300
aaacccaatg tgaaggcttt gctctctgta catgatactg tggctcagaa gaattacgac 360
ccagtgttgc ctcctatgcc tgaagatatt gacgatgagg aagactcagt aaaaataatc 420
cgtctggtca aaaatagaga accactggga gctaccatta agaaggatga acagaccggg 480
gcgatcattg tggccagaat catgagagga ggagctgcag atagaagtgg tcttattcat 540
gttggtgatg aacttaggga agtcaacggg ataccagtgg aggataaaag gcctgaggaa 600
ataatacaga ttttggctca gtctcaggga gcaattacat ttaagattat acccggcagc 660
aaagaggaga caccatcaaa agaaggcaag atgtttatca aagccctctt tgactataat 720
cctaatgagg ataaggcaat tccatgtaag gaagctgggc tttctttcaa aaagggagat 780
attcttcaga ttatgagcca agatgatgca acttggtggc aagcgaaaca cgaagctgat 840
gccaacccca gggcaggctt gatcccctca aagcatttcc aggaaaggag attggctttg 900
agacgaccag aaatattggt tcagcccctg aaagtttcca acaggaaatc atcctaa 957

<210> 12
<211> 318
<212> PRT
<213> homo sapiens

<400> 12
Met Pro Ala Leu Ser Thr Gly Ser Gly Ser Asp Thr Gly Leu Tyr Glu
1 5 10 15
Leu Leu Ala Ala Leu Pro Ala Gln Leu Gln Pro His Val Asp Ser Gln
20 25 30
Glu Asp Leu Thr Phe Leu Trp Asp Met Phe Gly Glu Lys Ser Leu His
35 40 45
Ser Leu Val Lys Ile His Glu Lys Leu His Tyr Tyr Glu Lys Gln Ser
50 55 60
Pro Val Pro Ile Leu His Gly Ala Ala Ala Leu Ala Asp Asp Leu Ala
65 70 75 80
Glu Glu Leu Gln Asn Lys Pro Leu Asn Ser Glu Ile Arg Glu Leu Leu
85 90 95
Lys Leu Leu Ser Lys Pro Asn Val Lys Ala Leu Leu Ser Val His Asp
100 105 110
Thr Val Ala Gln Lys Asn Tyr Asp Pro Val Leu Pro Pro Met Pro Glu
115 120 125
Asp Ile Asp Asp Glu Glu Asp Ser Val Lys Ile Ile Arg Leu Val Lys
130 135 140
Asn Arg Glu Pro Leu Gly Ala Thr Ile Lys Lys Asp Glu Gln Thr Gly
145 150 155 160
Ala Ile Ile Val Ala Arg Ile Met Arg Gly Gly Ala Ala Asp Arg Ser
165 170 175
Gly Leu Ile His Val Gly Asp Glu Leu Arg Glu Val Asn Gly Ile Pro
180 185 190
Val Glu Asp Lys Arg Pro Glu Glu Ile Ile Gln Ile Leu Ala Gln Ser
195 200 205
Gln Gly Ala Ile Thr Phe Lys Ile Ile Pro Gly Ser Lys Glu Glu Thr
210 215 220
Pro Ser Lys Glu Gly Lys Met Phe Ile Lys Ala Leu Phe Asp Tyr Asn
225 230 235 240
Pro Asn Glu Asp Lys Ala Ile Pro Cys Lys Glu Ala Gly Leu Ser Phe
245 250 255
Lys Lys Gly Asp Ile Leu Gln Ile Met Ser Gln Asp Asp Ala Thr Trp
260 265 270
Trp Gln Ala Lys His Glu Ala Asp Ala Asn Pro Arg Ala Gly Leu Ile
275 280 285
Pro Ser Lys His Phe Gln Glu Arg Arg Leu Ala Leu Arg Arg Pro Glu
290 295 300
Ile Leu Val Gln Pro Leu Lys Val Ser Asn Arg Lys Ser Ser
305 310 315

<210> 13
<211> 285
<212> DNA
<213> homo sapiens

<400> 13
atgaaacttt tcttccagat gtttatcaaa gccctctttg actataatcc taatgaggat 60
aaggcaattc catgtaagga agctgggctt tctttcaaaa agggagatat tcttcagatt 120
atgagccaag atgatgcaac ttggtggcaa gcgaaacacg aagctgatgc caaccccagg 180
gcaggcttga tcccctcaaa gcatttccag gaaaggagat tggctttgag acgaccagaa 240
atattggttc agcccctgaa agtttccaac aggaaatcat cctaa 285

<210> 14
<211> 94
<212> PRT
<213> homo sapiens

<400> 14
Met Lys Leu Phe Phe Gln Met Phe Ile Lys Ala Leu Phe Asp Tyr Asn
1 5 10 15
Pro Asn Glu Asp Lys Ala Ile Pro Cys Lys Glu Ala Gly Leu Ser Phe
20 25 30
Lys Lys Gly Asp Ile Leu Gln Ile Met Ser Gln Asp Asp Ala Thr Trp
35 40 45
Trp Gln Ala Lys His Glu Ala Asp Ala Asn Pro Arg Ala Gly Leu Ile
50 55 60
Pro Ser Lys His Phe Gln Glu Arg Arg Leu Ala Leu Arg Arg Pro Glu
65 70 75 80
Ile Leu Val Gln Pro Leu Lys Val Ser Asn Arg Lys Ser Ser
85 90

<210> 15
<211> 327
<212> DNA
<213> homo sapiens

<400> 15
atgtgctgcc caaagactgc ttgcagaggt cccgtgggag tagggctgaa tgaactgaaa 60
cgaaagctgc tgatcagtga cacccagcac tatggcgtga cagtgcccca taccaccaga 120
gcaagaagaa gccaggagag tgatggtgtt gaatacattt tcatttccaa gcatttgttt 180
gagacagatg tacaaaataa caagtttatt gaatatggag aatataaaaa caactactac 240
ggcacaagta tagactcagt tcggtctgtc cttgctaaaa acaaagtttg tttgttggat 300
gttcagcctc atgtaagtaa acaatga 327

<210> 16
<211> 108
<212> PRT
<213> homo sapiens

<400> 16
Met Cys Cys Pro Lys Thr Ala Cys Arg Gly Pro Val Gly Val Gly Leu
1 5 10 15
Asn Glu Leu Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly
20 25 30
Val Thr Val Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp
35 40 45
Gly Val Glu Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val
50 55 60
Gln Asn Asn Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr
65 70 75 80
Gly Thr Ser Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val
85 90 95
Cys Leu Leu Asp Val Gln Pro His Val Ser Lys Gln
100 105

<210> 17
<211> 1128
<212> DNA
<213> homo sapiens

<400> 17
atgccagctt tgtcaacggg atctgggagt gacactggtc tgtatgagct gttggctgct 60
ctgccagccc agctgcagcc acatgtggat agccaggaag acctgacctt cctctgggat 120
atgtttggtg aaaaaagcct gcattcattg gtaaagattc atgaaaaact acactactat 180
gagaagcaga gtccggtgcc cattctccat ggtgcggcgg ccttggccga tgatctggcc 240
gaagagcttc agaacaagcc attaaacagt gagatcagag agctgttgaa actactgtca 300
aaacccaatg tgaaggcttt gctctctgta catgatactg tggctcagaa gaattacgac 360
ccagtgttgc ctcctatgcc tgaagatatt gacgatgagg aagactcagt aaaaataatc 420
cgtctggtca aaaatagaga accactggga gctaccatta agaaggatga acagaccggg 480
gcgatcattg tggccagaat catgagagga ggagctgcag atagaagtgg tcttattcat 540

```
gttggtgatg aacttaggga agtcaacggg ataccagtgg aggataaaag gcctgaggaa     600
ataatacaga ttttggctca gtctcaggga gcaattacat ttaagattat acccggcagc     660
aaagaggaga caccatcaaa agaaggcaag atgtttatca aagccctctt tgactataat     720
cctaatgagg ataaggcaat tccatgtaag gaagctgggc tttctttcaa aaagggagat     780
attcttcaga ttatgagcca agatgatgca acttggtggc aagcgaaaca cgaagctgat     840
gccaacccca gggcaggctt gatcccctca aagcatttcc aggaaaggag attggctttg     900
agacgaccag aaatattggt tcagcccctg aaagtttcca acaggaaatc atctggtttt     960
agaagaagtt ttcgtcttag tagaaaagat aagaaaacaa ataaatccat gtatgaatgc    1020
aagaagagtg atcagtacga cacagctgac gtacccacat acgaagaagt gacaccgtat    1080
cggcgacaaa ctaatgaaaa atacagactc gttgtcttgg ttgcttga                 1128

<210> 18
<211> 375
<212> PRT
<213> homo sapiens

<400> 18
Met Pro Ala Leu Ser Thr Gly Ser Gly Ser Asp Thr Gly Leu Tyr Glu
 1               5                  10                  15
Leu Leu Ala Ala Leu Pro Ala Gln Leu Gln Pro His Val Asp Ser Gln
            20                  25                  30
Glu Asp Leu Thr Phe Leu Trp Asp Met Phe Gly Glu Lys Ser Leu His
        35                  40                  45
Ser Leu Val Lys Ile His Glu Lys Leu His Tyr Tyr Glu Lys Gln Ser
    50                  55                  60
Pro Val Pro Ile Leu His Gly Ala Ala Ala Leu Ala Asp Asp Leu Ala
65                  70                  75                  80
Glu Glu Leu Gln Asn Lys Pro Leu Asn Ser Glu Ile Arg Glu Leu Leu
                85                  90                  95
Lys Leu Leu Ser Lys Pro Asn Val Lys Ala Leu Leu Ser Val His Asp
            100                 105                 110
Thr Val Ala Gln Lys Asn Tyr Asp Pro Val Leu Pro Pro Met Pro Glu
        115                 120                 125
Asp Ile Asp Asp Glu Glu Asp Ser Val Lys Ile Ile Arg Leu Val Lys
    130                 135                 140
Asn Arg Glu Pro Leu Gly Ala Thr Ile Lys Lys Asp Glu Gln Thr Gly
145                 150                 155                 160
Ala Ile Ile Val Ala Arg Ile Met Arg Gly Gly Ala Ala Asp Arg Ser
                165                 170                 175
Gly Leu Ile His Val Gly Asp Glu Leu Arg Glu Val Asn Gly Ile Pro
            180                 185                 190
Val Glu Asp Lys Arg Pro Glu Glu Ile Ile Gln Ile Leu Ala Gln Ser
        195                 200                 205
Gln Gly Ala Ile Thr Phe Lys Ile Ile Pro Gly Ser Lys Glu Glu Thr
    210                 215                 220
Pro Ser Lys Glu Gly Lys Met Phe Ile Lys Ala Leu Phe Asp Tyr Asn
225                 230                 235                 240
Pro Asn Glu Asp Lys Ala Ile Pro Cys Lys Glu Ala Gly Leu Ser Phe
                245                 250                 255
Lys Lys Gly Asp Ile Leu Gln Ile Met Ser Gln Asp Asp Ala Thr Trp
            260                 265                 270
Trp Gln Ala Lys His Glu Ala Asp Ala Asn Pro Arg Ala Gly Leu Ile
        275                 280                 285
Pro Ser Lys His Phe Gln Glu Arg Arg Leu Ala Leu Arg Arg Pro Glu
    290                 295                 300
Ile Leu Val Gln Pro Leu Lys Val Ser Asn Arg Lys Ser Ser Gly Phe
305                 310                 315                 320
Arg Arg Ser Phe Arg Leu Ser Arg Lys Asp Lys Lys Thr Asn Lys Ser
                325                 330                 335
Met Tyr Glu Cys Lys Lys Ser Asp Gln Tyr Asp Thr Ala Asp Val Pro
            340                 345                 350
Thr Tyr Glu Glu Val Thr Pro Tyr Arg Arg Gln Thr Asn Glu Lys Tyr
        355                 360                 365
```

Arg Leu Val Val Leu Val Ala
370 375

<210> 19
<211> 414
<212> DNA
<213> homo sapiens

<400> 19
atgtatgaat gcaagaagag tgatcagtac gacacagctg acgtacccac atacgaagaa 60
gtgacaccgt atcggcgaca aactaatgaa aaatacagac tcgttgtctt ggttggtccc 120
gtgggagtag ggctgaatga actgaaacga aagctgctga tcagtgacac ccagcactat 180
ggcgtgacag tgccccatac caccagagca agaagaagcc aggagagtga tggtgttgaa 240
tacattttca tttccaagca tttgtttgag acagatgtac aaaataacaa gtttattgaa 300
tatggagaat ataaaaacaa ctactacggc acaagtatag actcagttcg gtctgtcctt 360
gctaaaaaca aagtttgttt gttggatgtt cagcctcatg taagtaaaca atga 414

<210> 20
<211> 137
<212> PRT
<213> homo sapiens

<400> 20
Met Tyr Glu Cys Lys Lys Ser Asp Gln Tyr Asp Thr Ala Asp Val Pro
1 5 10 15
Thr Tyr Glu Glu Val Thr Pro Tyr Arg Arg Gln Thr Asn Glu Lys Tyr
20 25 30
Arg Leu Val Val Leu Val Gly Pro Val Gly Val Gly Leu Asn Glu Leu
35 40 45
Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly Val Thr Val
50 55 60
Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp Gly Val Glu
65 70 75 80
Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val Gln Asn Asn
85 90 95
Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr Gly Thr Ser
100 105 110
Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val Cys Leu Leu
115 120 125
Asp Val Gln Pro His Val Ser Lys Gln
130 135

<210> 21
<211> 1422
<212> DNA
<213> homo sapiens

<400> 21
atgccagctt tgtcaacggg atctgggagt gacactggtc tgtatgagct gttggctgct 60
ctgccagccc agctgcagcc acatgtggat agccaggaag acctgacctt cctctgggat 120
atgtttggtg aaaaaagcct gcattcattg gtaaagattc atgaaaaact acactactat 180
gagaagcaga gtccggtgcc cattctccat ggtgcggcgg ccttggccga tgatctggcc 240
gaagagcttc agaacaagcc attaaacagt gagatcagag agctgttgaa actactgtca 300
aaacccaatg tgaaggcttt gctctctgta catgatactg tggctcagaa gaattacgac 360
ccagtgttgc ctcctatgcc tgaagatatt gacgatgagg aagactcagt aaaaataatc 420
cgtctggtca aaaatagaga accactggga gctaccatta agaaggatga acagaccggg 480
gcgatcattg tggccagaat catgagagga ggagctgcag atagaagtgg tcttattcat 540
gttggtgatg aacttaggga agtcaacggg ataccagtgg aggataaaag gcctgaggaa 600
ataatacaga ttttggctca gtctcaggga gcaattacat ttaagattat acccggcagc 660
aaagaggaga caccatcaaa agaaggcaag atgtttatca aagccctctt tgactataat 720
cctaatgagg ataaggcaat tccatgtaag gaagctgggc tttctttcaa aaagggagat 780
attcttcaga ttatgagcca agatgatgca acttggtggc aagcgaaaca cgaagctgat 840
gccaacccca gggcaggctt gatcccctca aagcatttcc aggaaaggag attggctttg 900

agacgaccag aaatattggt tcagcccctg aaagtttcca acaggaaatc atctggtttt 960
agaagaagtt ttcgtcttag tagaaaagat aagaaaacaa ataaatccat gtatgaatgc 1020
aagaagagtg atcagtacga cacagctgac gtacccacat acgaagaagt gacaccgtat 1080
cggcgacaaa ctaatgaaaa atacagactc gttgtcttgg ttggtcccgt gggagtaggg 1140
ctgaatgaac tgaaacgaaa gctgctgatc agtgacaccc agcactatgg cgtgacagtg 1200
ccccatacca ccagagcaag aagaagccag gagagtgatg gtgttgaata cattttcatt 1260
tccaagcatt tgtttgagac agatgtacaa aataacaagt ttattgaata tggagaatat 1320
aaaaacaact actacggcac aagtatagac tcagttcggt ctgtccttgc taaaaacaaa 1380
gtttgtttgt tggatgttca gcctcatgta agtaaacaat ga 1422

<210> 22
<211> 473
<212> PRT
<213> homo sapiens

<400> 22
Met Pro Ala Leu Ser Thr Gly Ser Gly Ser Asp Thr Gly Leu Tyr Glu
1 5 10 15
Leu Leu Ala Ala Leu Pro Ala Gln Leu Gln Pro His Val Asp Ser Gln
20 25 30
Glu Asp Leu Thr Phe Leu Trp Asp Met Phe Gly Glu Lys Ser Leu His
35 40 45
Ser Leu Val Lys Ile His Glu Lys Leu His Tyr Tyr Glu Lys Gln Ser
50 55 60
Pro Val Pro Ile Leu His Gly Ala Ala Ala Leu Ala Asp Asp Leu Ala
65 70 75 80
Glu Glu Leu Gln Asn Lys Pro Leu Asn Ser Glu Ile Arg Glu Leu Leu
85 90 95
Lys Leu Leu Ser Lys Pro Asn Val Lys Ala Leu Leu Ser Val His Asp
100 105 110
Thr Val Ala Gln Lys Asn Tyr Asp Pro Val Leu Pro Pro Met Pro Glu
115 120 125
Asp Ile Asp Asp Glu Glu Asp Ser Val Lys Ile Ile Arg Leu Val Lys
130 135 140
Asn Arg Glu Pro Leu Gly Ala Thr Ile Lys Lys Asp Glu Gln Thr Gly
145 150 155 160
Ala Ile Ile Val Ala Arg Ile Met Arg Gly Gly Ala Ala Asp Arg Ser
165 170 175
Gly Leu Ile His Val Gly Asp Glu Leu Arg Glu Val Asn Gly Ile Pro
180 185 190
Val Glu Asp Lys Arg Pro Glu Glu Ile Ile Gln Ile Leu Ala Gln Ser
195 200 205
Gln Gly Ala Ile Thr Phe Lys Ile Ile Pro Gly Ser Lys Glu Glu Thr
210 215 220
Pro Ser Lys Glu Gly Lys Met Phe Ile Lys Ala Leu Phe Asp Tyr Asn
225 230 235 240
Pro Asn Glu Asp Lys Ala Ile Pro Cys Lys Glu Ala Gly Leu Ser Phe
245 250 255
Lys Lys Gly Asp Ile Leu Gln Ile Met Ser Gln Asp Asp Ala Thr Trp
260 265 270
Trp Gln Ala Lys His Glu Ala Asp Ala Asn Pro Arg Ala Gly Leu Ile
275 280 285
Pro Ser Lys His Phe Gln Glu Arg Arg Leu Ala Leu Arg Arg Pro Glu
290 295 300
Ile Leu Val Gln Pro Leu Lys Val Ser Asn Arg Lys Ser Ser Gly Phe
305 310 315 320
Arg Arg Ser Phe Arg Leu Ser Arg Lys Asp Lys Lys Thr Asn Lys Ser
325 330 335
Met Tyr Glu Cys Lys Lys Ser Asp Gln Tyr Asp Thr Ala Asp Val Pro
340 345 350
Thr Tyr Glu Glu Val Thr Pro Tyr Arg Arg Gln Thr Asn Glu Lys Tyr
355 360 365
Arg Leu Val Val Leu Val Gly Pro Val Gly Val Gly Leu Asn Glu Leu

```
    370                 375                 380
Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly Val Thr Val
385                 390                 395                 400
Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp Gly Val Glu
                405                 410                 415
Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val Gln Asn Asn
            420                 425                 430
Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr Gly Thr Ser
        435                 440                 445
Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val Cys Leu Leu
    450                 455                 460
Asp Val Gln Pro His Val Ser Lys Gln
465                 470
```

<210> 23
<211> 750
<212> DNA
<213> homo sapiens

<400> 23

```
atgaaacttt tcttccagat gtttatcaaa gccctctttg actataatcc taatgaggat      60
aaggcaattc catgtaagga agctgggctt tctttcaaaa agggagatat tcttcagatt     120
atgagccaag atgatgcaac ttggtggcaa gcgaaacacg aagctgatgc caaccccagg     180
gcaggcttga tcccctcaaa gcatttccag gaaaggagat tggctttgag acgaccagaa     240
atattggttc agcccctgaa agtttccaac aggaaatcat ctggttttag aagaagtttt     300
cgtcttagta gaaaagataa gaaaacaaat aaatccatgt atgaatgcaa gaagagtgat     360
cagtacgaca cagctgacgt acccacatac gaagaagtga caccgtatcg gcgacaaact     420
aatgaaaaat acagactcgt tgtcttggtt ggtcccgtgg gagtagggct gaatgaactg     480
aaacgaaagc tgctgatcag tgacacccag cactatggcg tgacagtgcc ccataccacc     540
agagcaagaa gaagccagga gagtgatggt gttgaataca ttttcatttc caagcatttg     600
tttgagacag atgtacaaaa taacaagttt attgaatatg gagaatataa aaacaactac     660
tacggcacaa gtatagactc agttcggtct gtccttgcta aaaacaaagt ttgtttgttg     720
gatgttcagc ctcatgtaag taaacaatga                                      750
```

<210> 24
<211> 249
<212> PRT
<213> homo sapiens

<400> 24

```
Met Lys Leu Phe Phe Gln Met Phe Ile Lys Ala Leu Phe Asp Tyr Asn
 1               5                  10                  15
Pro Asn Glu Asp Lys Ala Ile Pro Cys Lys Glu Ala Gly Leu Ser Phe
            20                  25                  30
Lys Lys Gly Asp Ile Leu Gln Ile Met Ser Gln Asp Asp Ala Thr Trp
        35                  40                  45
Trp Gln Ala Lys His Glu Ala Asp Ala Asn Pro Arg Ala Gly Leu Ile
    50                  55                  60
Pro Ser Lys His Phe Gln Glu Arg Arg Leu Ala Leu Arg Arg Pro Glu
65                  70                  75                  80
Ile Leu Val Gln Pro Leu Lys Val Ser Asn Arg Lys Ser Ser Gly Phe
                85                  90                  95
Arg Arg Ser Phe Arg Leu Ser Arg Lys Asp Lys Lys Thr Asn Lys Ser
            100                 105                 110
Met Tyr Glu Cys Lys Lys Ser Asp Gln Tyr Asp Thr Ala Asp Val Pro
        115                 120                 125
Thr Tyr Glu Glu Val Thr Pro Tyr Arg Arg Gln Thr Asn Glu Lys Tyr
    130                 135                 140
Arg Leu Val Val Leu Val Gly Pro Val Gly Val Gly Leu Asn Glu Leu
145                 150                 155                 160
Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly Val Thr Val
                165                 170                 175
Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp Gly Val Glu
```

```
            180                 185                 190
Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val Gln Asn Asn
        195                 200                 205
Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr Gly Thr Ser
    210                 215                 220
Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val Cys Leu Leu
225                 230                 235                 240
Asp Val Gln Pro His Val Ser Lys Gln
                245
```

<210> 25
<211> 468
<212> DNA
<213> homo sapiens

<400> 25
atgtgctgcc caaagactgc ttgcagaggt cccgtgggag tagggctgaa tgaactgaaa 60
cgaaagctgc tgatcagtga cacccagcac tatggcgtga cagtgcccca taccaccaga 120
gcaagaagaa gccaggagag tgatggtgtt gaatacattt tcatttccaa gcatttgttt 180
gagacagatg tacaaaataa caagtttatt gaatatggag aatataaaaa caactactac 240
ggcacaagta tagactcagt tcggtctgtc cttgctaaaa acaaagtttg tttgttggat 300
gttcagcctc atacagtgaa gcatttaagg acactagaat ttaagcccta tgtgatattt 360
ataaagcctc catcaataga gcgtttgaga gaaacaagaa aaaatgcaaa gattatttca 420
agcagagatg accaaggtgc tgcaaaaccc ttcacacaag gagaatag 468

<210> 26
<211> 155
<212> PRT
<213> homo sapiens

<400> 26
```
Met Cys Cys Pro Lys Thr Ala Cys Arg Gly Pro Val Gly Val Gly Leu
 1               5                  10                  15
Asn Glu Leu Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly
            20                  25                  30
Val Thr Val Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp
        35                  40                  45
Gly Val Glu Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val
    50                  55                  60
Gln Asn Asn Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr
65                  70                  75                  80
Gly Thr Ser Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val
                85                  90                  95
Cys Leu Leu Asp Val Gln Pro His Thr Val Lys His Leu Arg Thr Leu
            100                 105                 110
Glu Phe Lys Pro Tyr Val Ile Phe Ile Lys Pro Pro Ser Ile Glu Arg
        115                 120                 125
Leu Arg Glu Thr Arg Lys Asn Ala Lys Ile Ile Ser Ser Arg Asp Asp
    130                 135                 140
Gln Gly Ala Ala Lys Pro Phe Thr Gln Gly Glu
145                 150                 155
```

<210> 27
<211> 555
<212> DNA
<213> homo sapiens

<400> 27
atgtatgaat gcaagaagag tgatcagtac gacacagctg acgtacccac atacgaagaa 60
gtgacaccgt atcggcgaca aactaatgaa aaatacagac tcgttgtctt ggttggtccc 120
gtgggagtag ggctgaatga actgaaacga aagctgctga tcagtgacac ccagcactat 180
ggcgtgacag tgccccatac caccagagca agaagaagcc aggagagtga tggtgttgaa 240
tacattttca tttccaagca tttgtttgag acagatgtac aaaataacaa gtttattgaa 300

tatggagaat ataaaaacaa ctactacggc acaagtatag actcagttcg gtctgtcctt 360
gctaaaaaca aagtttgttt gttggatgtt cagcctcata cagtgaagca tttaaggaca 420
ctagaattta agccctatgt gatatttata aagcctccat caatagagcg tttgagagaa 480
acaagaaaaa atgcaaagat tatttcaagc agagatgacc aaggtgctgc aaaacccttc 540
acacaaggag aatag 555

<210> 28
<211> 184
<212> PRT
<213> homo sapiens

<400> 28
Met Tyr Glu Cys Lys Lys Ser Asp Gln Tyr Asp Thr Ala Asp Val Pro
1 5 10 15
Thr Tyr Glu Glu Val Thr Pro Tyr Arg Arg Gln Thr Asn Glu Lys Tyr
20 25 30
Arg Leu Val Val Leu Val Gly Pro Val Gly Val Gly Leu Asn Glu Leu
35 40 45
Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly Val Thr Val
50 55 60
Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp Gly Val Glu
65 70 75 80
Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val Gln Asn Asn
85 90 95
Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr Gly Thr Ser
100 105 110
Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val Cys Leu Leu
115 120 125
Asp Val Gln Pro His Thr Val Lys His Leu Arg Thr Leu Glu Phe Lys
130 135 140
Pro Tyr Val Ile Phe Ile Lys Pro Pro Ser Ile Glu Arg Leu Arg Glu
145 150 155 160
Thr Arg Lys Asn Ala Lys Ile Ile Ser Ser Arg Asp Asp Gln Gly Ala
165 170 175
Ala Lys Pro Phe Thr Gln Gly Glu
180

<210> 29
<211> 1563
<212> DNA
<213> homo sapiens

<400> 29
atgccagctt tgtcaacggg atctgggagt gacactggtc tgtatgagct gttggctgct 60
ctgccagccc agctgcagcc acatgtggat agccaggaag acctgacctt cctctgggat 120
atgtttggtg aaaaaagcct gcattcattg gtaaagattc atgaaaaact acactactat 180
gagaagcaga gtccggtgcc cattctccat ggtgcggcgg ccttggccga tgatctggcc 240
gaagagcttc agaacaagcc attaaacagt gagatcagag agctgttgaa actactgtca 300
aaacccaatg tgaaggcttt gctctctgta catgatactg tggctcagaa gaattacgac 360
ccagtgttgc ctcctatgcc tgaagatatt gacgatgagg aagactcagt aaaaataatc 420
cgtctggtca aaaatagaga accactggga gctaccatta agaaggatga acagaccggg 480
gcgatcattg tggccagaat catgagagga ggagctgcag atagaagtgg tcttattcat 540
gttggtgatg aacttaggga agtcaacggg ataccagtgg aggataaaag gcctgaggaa 600
ataatacaga ttttggctca gtctcaggga gcaattacat ttaagattat acccggcagc 660
aaagaggaga caccatcaaa agaaggcaag atgtttatca aagccctctt tgactataat 720
cctaatgagg ataaggcaat tccatgtaag gaagctgggc tttctttcaa aaagggagat 780
attcttcaga ttatgagcca agatgatgca acttggtggc aagcgaaaca cgaagctgat 840
gccaacccca gggcaggctt gatcccctca aagcatttcc aggaaaggag attggctttg 900
agacgaccag aaatattggt tcagcccctg aaagtttcca acaggaaatc atctggtttt 960
agaagaagtt ttcgtcttag tagaaaagat aagaaaacaa ataaatccat gtatgaatgc 1020
aagaagagtg atcagtacga cacagctgac gtacccacat acgaagaagt gacaccgtat 1080
cggcgacaaa ctaatgaaaa atacagactc gttgtcttgg ttggtcccgt gggagtaggg 1140
ctgaatgaac tgaaacgaaa gctgctgatc agtgacaccc agcactatgg cgtgacagtg 1200

ccccatacca ccagagcaag aagaagccag gagagtgatg gtgttgaata cattttcatt 1260
tccaagcatt tgtttgagac agatgtacaa aataacaagt ttattgaata tggagaatat 1320
aaaaacaact actacggcac aagtatagac tcagttcggt ctgtccttgc taaaaacaaa 1380
gtttgtttgt tggatgttca gcctcataca gtgaagcatt taaggacact agaatttaag 1440
ccctatgtga tatttataaa gcctccatca atagagcgtt tgagagaaac aagaaaaaat 1500
gcaaagatta tttcaagcag agatgaccaa ggtgctgcaa aacccttcac acaaggagaa 1560
tag 1563

<210> 30
<211> 520
<212> PRT
<213> homo sapiens

<400> 30
Met Pro Ala Leu Ser Thr Gly Ser Gly Ser Asp Thr Gly Leu Tyr Glu
1 5 10 15
Leu Leu Ala Ala Leu Pro Ala Gln Leu Gln Pro His Val Asp Ser Gln
20 25 30
Glu Asp Leu Thr Phe Leu Trp Asp Met Phe Gly Glu Lys Ser Leu His
35 40 45
Ser Leu Val Lys Ile His Glu Lys Leu His Tyr Tyr Glu Lys Gln Ser
50 55 60
Pro Val Pro Ile Leu His Gly Ala Ala Ala Leu Ala Asp Asp Leu Ala
65 70 75 80
Glu Glu Leu Gln Asn Lys Pro Leu Asn Ser Glu Ile Arg Glu Leu Leu
85 90 95
Lys Leu Leu Ser Lys Pro Asn Val Lys Ala Leu Leu Ser Val His Asp
100 105 110
Thr Val Ala Gln Lys Asn Tyr Asp Pro Val Leu Pro Pro Met Pro Glu
115 120 125
Asp Ile Asp Asp Glu Glu Asp Ser Val Lys Ile Ile Arg Leu Val Lys
130 135 140
Asn Arg Glu Pro Leu Gly Ala Thr Ile Lys Lys Asp Glu Gln Thr Gly
145 150 155 160
Ala Ile Ile Val Ala Arg Ile Met Arg Gly Gly Ala Ala Asp Arg Ser
165 170 175
Gly Leu Ile His Val Gly Asp Glu Leu Arg Glu Val Asn Gly Ile Pro
180 185 190
Val Glu Asp Lys Arg Pro Glu Glu Ile Ile Gln Ile Leu Ala Gln Ser
195 200 205
Gln Gly Ala Ile Thr Phe Lys Ile Ile Pro Gly Ser Lys Glu Glu Thr
210 215 220
Pro Ser Lys Glu Gly Lys Met Phe Ile Lys Ala Leu Phe Asp Tyr Asn
225 230 235 240
Pro Asn Glu Asp Lys Ala Ile Pro Cys Lys Glu Ala Gly Leu Ser Phe
245 250 255
Lys Lys Gly Asp Ile Leu Gln Ile Met Ser Gln Asp Asp Ala Thr Trp
260 265 270
Trp Gln Ala Lys His Glu Ala Asp Ala Asn Pro Arg Ala Gly Leu Ile
275 280 285
Pro Ser Lys His Phe Gln Glu Arg Arg Leu Ala Leu Arg Arg Pro Glu
290 295 300
Ile Leu Val Gln Pro Leu Lys Val Ser Asn Arg Lys Ser Ser Gly Phe
305 310 315 320
Arg Arg Ser Phe Arg Leu Ser Arg Lys Asp Lys Lys Thr Asn Lys Ser
325 330 335
Met Tyr Glu Cys Lys Lys Ser Asp Gln Tyr Asp Thr Ala Asp Val Pro
340 345 350
Thr Tyr Glu Glu Val Thr Pro Tyr Arg Arg Gln Thr Asn Glu Lys Tyr
355 360 365
Arg Leu Val Val Leu Val Gly Pro Val Gly Val Gly Leu Asn Glu Leu
370 375 380
Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly Val Thr Val

```
385                 390                 395                 400
Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp Gly Val Glu
                405                 410                 415
Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val Gln Asn Asn
            420                 425                 430
Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr Gly Thr Ser
        435                 440                 445
Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val Cys Leu Leu
    450                 455                 460
Asp Val Gln Pro His Thr Val Lys His Leu Arg Thr Leu Glu Phe Lys
465                 470                 475                 480
Pro Tyr Val Ile Phe Ile Lys Pro Pro Ser Ile Glu Arg Leu Arg Glu
                485                 490                 495
Thr Arg Lys Asn Ala Lys Ile Ile Ser Ser Arg Asp Asp Gln Gly Ala
            500                 505                 510
Ala Lys Pro Phe Thr Gln Gly Glu
        515                 520
```

<210> 31
<211> 891
<212> DNA
<213> homo sapiens

<400> 31

```
atgaaacttt tcttccagat gtttatcaaa gccctctttg actataatcc taatgaggat      60
aaggcaattc catgtaagga agctgggctt tctttcaaaa agggagatat tcttcagatt     120
atgagccaag atgatgcaac ttggtggcaa gcgaaacacg aagctgatgc caaccccagg     180
gcaggcttga tcccctcaaa gcatttccag gaaaggagat tggctttgag acgaccagaa     240
atattggttc agcccctgaa agtttccaac aggaaatcat ctggttttag aagaagtttt     300
cgtcttagta gaaaagataa gaaaacaaat aaatccatgt atgaatgcaa gaagagtgat     360
cagtacgaca cagctgacgt acccacatac gaagaagtga caccgtatcg gcgacaaact     420
aatgaaaaat acagactcgt tgtcttggtt ggtcccgtgg gagtagggct gaatgaactg     480
aaacgaaagc tgctgatcag tgacacccag cactatggcg tgacagtgcc ccataccacc     540
agagcaagaa gaagccagga gagtgatggt gttgaataca ttttcatttc caagcatttg     600
tttgagacag atgtacaaaa taacaagttt attgaatatg gagaatataa aaacaactac     660
tacggcacaa gtatagactc agttcggtct gtccttgcta aaaacaaagt ttgtttgttg     720
gatgttcagc ctcatacagt gaagcattta aggacactag aatttaagcc ctatgtgata     780
tttataaagc ctccatcaat agagcgtttg agagaaacaa gaaaaaatgc aaagattatt     840
tcaagcagag atgaccaagg tgctgcaaaa cccttcacac aaggagaata g              891
```

<210> 32
<211> 296
<212> PRT
<213> homo sapiens

<400> 32

```
Met Lys Leu Phe Phe Gln Met Phe Ile Lys Ala Leu Phe Asp Tyr Asn
 1               5                  10                  15
Pro Asn Glu Asp Lys Ala Ile Pro Cys Lys Glu Ala Gly Leu Ser Phe
            20                  25                  30
Lys Lys Gly Asp Ile Leu Gln Ile Met Ser Gln Asp Asp Ala Thr Trp
        35                  40                  45
Trp Gln Ala Lys His Glu Ala Asp Ala Asn Pro Arg Ala Gly Leu Ile
    50                  55                  60
Pro Ser Lys His Phe Gln Glu Arg Arg Leu Ala Leu Arg Arg Pro Glu
65                  70                  75                  80
Ile Leu Val Gln Pro Leu Lys Val Ser Asn Arg Lys Ser Ser Gly Phe
                85                  90                  95
Arg Arg Ser Phe Arg Leu Ser Arg Lys Asp Lys Lys Thr Asn Lys Ser
            100                 105                 110
Met Tyr Glu Cys Lys Lys Ser Asp Gln Tyr Asp Thr Ala Asp Val Pro
        115                 120                 125
Thr Tyr Glu Glu Val Thr Pro Tyr Arg Arg Gln Thr Asn Glu Lys Tyr
```

```
    130                 135                 140
Arg Leu Val Val Leu Val Gly Pro Val Gly Val Gly Leu Asn Glu Leu
145                 150                 155                 160
Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly Val Thr Val
                165                 170                 175
Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp Gly Val Glu
            180                 185                 190
Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val Gln Asn Asn
        195                 200                 205
Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr Gly Thr Ser
    210                 215                 220
Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val Cys Leu Leu
225                 230                 235                 240
Asp Val Gln Pro His Thr Val Lys His Leu Arg Thr Leu Glu Phe Lys
                245                 250                 255
Pro Tyr Val Ile Phe Ile Lys Pro Pro Ser Ile Glu Arg Leu Arg Glu
            260                 265                 270
Thr Arg Lys Asn Ala Lys Ile Ile Ser Ser Arg Asp Asp Gln Gly Ala
        275                 280                 285
Ala Lys Pro Phe Thr Gln Gly Glu
    290                 295
```

<210> 33
<211> 585
<212> DNA
<213> homo sapiens

<400> 33

```
atgtgctgcc caaagactgc ttgcagaggt cccgtgggag tagggctgaa tgaactgaaa      60
cgaaagctgc tgatcagtga cacccagcac tatggcgtga cagtgcccca taccaccaga     120
gcaagaagaa gccaggagag tgatggtgtt gaatacattt tcatttccaa gcatttgttt     180
gagacagatg tacaaaataa caagtttatt gaatatggag aatataaaaa caactactac     240
ggcacaagta tagactcagt tcggtctgtc cttgctaaaa acaaagtttg tttgttggat     300
gttcagcctc atacagtgaa gcatttaagg acactagaat ttaagcccta tgtgatattt     360
ataaagcctc catcaataga gcgtttgaga gaaacaagaa aaaatgcaaa gattatttca     420
agcagagatg accaaggtgc tgcaaaaccc ttcacagaag aagattttca agaaatgatt     480
aaatctgcac agataatgga aagtcaatat ggtcatcttt ttgacaaaat tataataaat     540
gatgacctca ctgtggcatt caaaaaaaaa aaaaaaaaaa aaaaa                     585
```

<210> 34
<211> 195
<212> PRT
<213> homo sapiens

<400> 34

```
Met Cys Cys Pro Lys Thr Ala Cys Arg Gly Pro Val Gly Val Gly Leu
 1               5                  10                  15
Asn Glu Leu Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly
            20                  25                  30
Val Thr Val Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp
        35                  40                  45
Gly Val Glu Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val
    50                  55                  60
Gln Asn Asn Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr
65                  70                  75                  80
Gly Thr Ser Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val
                85                  90                  95
Cys Leu Leu Asp Val Gln Pro His Thr Val Lys His Leu Arg Thr Leu
            100                 105                 110
Glu Phe Lys Pro Tyr Val Ile Phe Ile Lys Pro Pro Ser Ile Glu Arg
        115                 120                 125
Leu Arg Glu Thr Arg Lys Asn Ala Lys Ile Ile Ser Ser Arg Asp Asp
    130                 135                 140
```

```
Gln Gly Ala Ala Lys Pro Phe Thr Glu Glu Asp Phe Gln Glu Met Ile
145                 150                 155                 160
Lys Ser Ala Gln Ile Met Glu Ser Gln Tyr Gly His Leu Phe Asp Lys
                165                 170                 175
Ile Ile Ile Asn Asp Asp Leu Thr Val Ala Phe Lys Lys Lys Lys Lys
            180                 185                 190
Lys Lys Lys
        195
```

<210> 35
<211> 672
<212> DNA
<213> homo sapiens

<400> 35

```
atgtatgaat gcaagaagag tgatcagtac gacacagctg acgtacccac atacgaagaa      60
gtgacaccgt atcggcgaca aactaatgaa aaatacagac tcgttgtctt ggttggtccc     120
gtgggagtag ggctgaatga actgaaacga aagctgctga tcagtgacac ccagcactat     180
ggcgtgacag tgccccatac caccagagca agaagaagcc aggagagtga tggtgttgaa     240
tacattttca tttccaagca tttgtttgag acagatgtac aaaataacaa gtttattgaa     300
tatggagaat ataaaaacaa ctactacggc acaagtatag actcagttcg gtctgtcctt     360
gctaaaaaca aagtttgttt gttggatgtt cagcctcata cagtgaagca tttaaggaca     420
ctagaattta agccctatgt gatatttata aagcctccat caatagagcg tttgagagaa     480
acaagaaaaa atgcaaagat tatttcaagc agagatgacc aaggtgctgc aaaaccttc      540
acagaagaag attttcaaga aatgattaaa tctgcacaga taatggaaag tcaatatggt     600
catctttttg acaaaattat aataaatgat gacctcactg tggcattcaa aaaaaaaaaa     660
aaaaaaaaaa aa                                                         672
```

<210> 36
<211> 224
<212> PRT
<213> homo sapiens

<400> 36

```
Met Tyr Glu Cys Lys Lys Ser Asp Gln Tyr Asp Thr Ala Asp Val Pro
 1               5                  10                  15
Thr Tyr Glu Glu Val Thr Pro Tyr Arg Arg Gln Thr Asn Glu Lys Tyr
            20                  25                  30
Arg Leu Val Val Leu Val Gly Pro Val Gly Val Gly Leu Asn Glu Leu
        35                  40                  45
Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly Val Thr Val
    50                  55                  60
Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp Gly Val Glu
65                  70                  75                  80
Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val Gln Asn Asn
                85                  90                  95
Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr Gly Thr Ser
            100                 105                 110
Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val Cys Leu Leu
        115                 120                 125
Asp Val Gln Pro His Thr Val Lys His Leu Arg Thr Leu Glu Phe Lys
    130                 135                 140
Pro Tyr Val Ile Phe Ile Lys Pro Pro Ser Ile Glu Arg Leu Arg Glu
145                 150                 155                 160
Thr Arg Lys Asn Ala Lys Ile Ile Ser Ser Arg Asp Asp Gln Gly Ala
                165                 170                 175
Ala Lys Pro Phe Thr Glu Glu Asp Phe Gln Glu Met Ile Lys Ser Ala
            180                 185                 190
Gln Ile Met Glu Ser Gln Tyr Gly His Leu Phe Asp Lys Ile Ile Ile
        195                 200                 205
Asn Asp Asp Leu Thr Val Ala Phe Lys Lys Lys Lys Lys Lys Lys Lys
    210                 215                 220
```

<210> 37
<211> 1680
<212> DNA
<213> homo sapiens

<400> 37
atgccagctt tgtcaacggg atctgggagt gacactggtc tgtatgagct gttggctgct 60
ctgccagccc agctgcagcc acatgtggat agccaggaag acctgacctt cctctgggat 120
atgtttggtg aaaaaagcct gcattcattg gtaaagattc atgaaaaact acactactat 180
gagaagcaga gtccggtgcc cattctccat ggtgcggcgg ccttggccga tgatctggcc 240
gaagagcttc agaacaagcc attaaacagt gagatcagag agctgttgaa actactgtca 300
aaacccaatg tgaaggcttt gctctctgta catgatactg tggctcagaa gaattacgac 360
ccagtgttgc ctcctatgcc tgaagatatt gacgatgagg aagactcagt aaaaataatc 420
cgtctggtca aaaatagaga accactggga gctaccatta agaaggatga acagaccggg 480
gcgatcattg tggccagaat catgagagga ggagctgcag atagaagtgg tcttattcat 540
gttggtgatg aacttaggga agtcaacggg ataccagtgg aggataaaag gcctgaggaa 600
ataatacaga ttttggctca gtctcaggga gcaattacat ttaagattat acccggcagc 660
aaagaggaga caccatcaaa agaaggcaag atgtttatca aagccctctt tgactataat 720
cctaatgagg ataaggcaat tccatgtaag gaagctgggc tttctttcaa aaagggagat 780
attcttcaga ttatgagcca agatgatgca acttggtggc aagcgaaaca cgaagctgat 840
gccaacccca gggcaggctt gatcccctca aagcatttcc aggaaaggag attggctttg 900
agacgaccag aaatattggt tcagcccctg aaagtttcca acaggaaatc atctggtttt 960
agaagaagtt ttcgtcttag tagaaaagat aagaaaacaa ataaatccat gtatgaatgc 1020
aagaagagtg atcagtacga cacagctgac gtacccacat acgaagaagt gacaccgtat 1080
cggcgacaaa ctaatgaaaa atacagactc gttgtcttgg ttggtcccgt gggagtaggg 1140
ctgaatgaac tgaaacgaaa gctgctgatc agtgacaccc agcactatgg cgtgacagtg 1200
ccccatacca ccagagcaag aagaagccag gagagtgatg gtgttgaata cattttcatt 1260
tccaagcatt tgtttgagac agatgtacaa aataacaagt ttattgaata tggagaatat 1320
aaaaacaact actacggcac aagtatagac tcagttcggt ctgtccttgc taaaaacaaa 1380
gtttgtttgt tggatgttca gcctcataca gtgaagcatt taaggacact agaatttaag 1440
ccctatgtga tatttataaa gcctccatca atagagcgtt tgagagaaac aagaaaaaat 1500
gcaaagatta tttcaagcag agatgaccaa ggtgctgcaa aacccttcac agaagaagat 1560
tttcaagaaa tgattaaatc tgcacagata atggaaagtc aatatggtca tcttttgac 1620
aaaattataa taaatgatga cctcactgtg gcattcaaaa aaaaaaaaaa aaaaaaaaaa 1680

<210> 38
<211> 560
<212> PRT
<213> homo sapiens

<400> 38
Met Pro Ala Leu Ser Thr Gly Ser Gly Ser Asp Thr Gly Leu Tyr Glu
1 5 10 15
Leu Leu Ala Ala Leu Pro Ala Gln Leu Gln Pro His Val Asp Ser Gln
20 25 30
Glu Asp Leu Thr Phe Leu Trp Asp Met Phe Gly Glu Lys Ser Leu His
35 40 45
Ser Leu Val Lys Ile His Glu Lys Leu His Tyr Tyr Glu Lys Gln Ser
50 55 60
Pro Val Pro Ile Leu His Gly Ala Ala Ala Leu Ala Asp Asp Leu Ala
65 70 75 80
Glu Glu Leu Gln Asn Lys Pro Leu Asn Ser Glu Ile Arg Glu Leu Leu
85 90 95
Lys Leu Leu Ser Lys Pro Asn Val Lys Ala Leu Leu Ser Val His Asp
100 105 110
Thr Val Ala Gln Lys Asn Tyr Asp Pro Val Leu Pro Pro Met Pro Glu
115 120 125
Asp Ile Asp Asp Glu Glu Asp Ser Val Lys Ile Ile Arg Leu Val Lys
130 135 140
Asn Arg Glu Pro Leu Gly Ala Thr Ile Lys Lys Asp Glu Gln Thr Gly
145 150 155 160
Ala Ile Ile Val Ala Arg Ile Met Arg Gly Gly Ala Ala Asp Arg Ser
165 170 175

Gly Leu Ile His Val Gly Asp Glu Leu Arg Glu Val Asn Gly Ile Pro
180 185 190
Val Glu Asp Lys Arg Pro Glu Glu Ile Ile Gln Ile Leu Ala Gln Ser
195 200 205
Gln Gly Ala Ile Thr Phe Lys Ile Ile Pro Gly Ser Lys Glu Glu Thr
210 215 220
Pro Ser Lys Glu Gly Lys Met Phe Ile Lys Ala Leu Phe Asp Tyr Asn
225 230 235 240
Pro Asn Glu Asp Lys Ala Ile Pro Cys Lys Glu Ala Gly Leu Ser Phe
245 250 255
Lys Lys Gly Asp Ile Leu Gln Ile Met Ser Gln Asp Asp Ala Thr Trp
260 265 270
Trp Gln Ala Lys His Glu Ala Asp Ala Asn Pro Arg Ala Gly Leu Ile
275 280 285
Pro Ser Lys His Phe Gln Glu Arg Arg Leu Ala Leu Arg Arg Pro Glu
290 295 300
Ile Leu Val Gln Pro Leu Lys Val Ser Asn Arg Lys Ser Ser Gly Phe
305 310 315 320
Arg Arg Ser Phe Arg Leu Ser Arg Lys Asp Lys Lys Thr Asn Lys Ser
325 330 335
Met Tyr Glu Cys Lys Lys Ser Asp Gln Tyr Asp Thr Ala Asp Val Pro
340 345 350
Thr Tyr Glu Glu Val Thr Pro Tyr Arg Arg Gln Thr Asn Glu Lys Tyr
355 360 365
Arg Leu Val Val Leu Val Gly Pro Val Gly Val Gly Leu Asn Glu Leu
370 375 380
Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly Val Thr Val
385 390 395 400
Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp Gly Val Glu
405 410 415
Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val Gln Asn Asn
420 425 430
Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr Gly Thr Ser
435 440 445
Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val Cys Leu Leu
450 455 460
Asp Val Gln Pro His Thr Val Lys His Leu Arg Thr Leu Glu Phe Lys
465 470 475 480
Pro Tyr Val Ile Phe Ile Lys Pro Pro Ser Ile Glu Arg Leu Arg Glu
485 490 495
Thr Arg Lys Asn Ala Lys Ile Ile Ser Ser Arg Asp Asp Gln Gly Ala
500 505 510
Ala Lys Pro Phe Thr Glu Glu Asp Phe Gln Glu Met Ile Lys Ser Ala
515 520 525
Gln Ile Met Glu Ser Gln Tyr Gly His Leu Phe Asp Lys Ile Ile Ile
530 535 540
Asn Asp Asp Leu Thr Val Ala Phe Lys Lys Lys Lys Lys Lys Lys Lys
545 550 555 560

<210> 39
<211> 1008
<212> DNA
<213> homo sapiens

<400> 39
atgaaacttt tcttccagat gtttatcaaa gccctctttg actataatcc taatgaggat 60
aaggcaattc catgtaagga agctgggctt tctttcaaaa agggagatat tcttcagatt 120
atgagccaag atgatgcaac ttggtggcaa gcgaaacacg aagctgatgc caaccccagg 180
gcaggcttga tcccctcaaa gcatttccag gaaaggagat tggctttgag acgaccagaa 240
atattggttc agcccctgaa agtttccaac aggaaatcat ctggttttag aagaagtttt 300
cgtcttagta gaaaagataa gaaaacaaat aaatccatgt atgaatgcaa gaagagtgat 360
cagtacgaca cagctgacgt acccacatac gaagaagtga caccgtatcg gcgacaaact 420
aatgaaaaat acagactcgt tgtcttggtt ggtcccgtgg gagtagggct gaatgaactg 480

aaacgaaagc tgctgatcag tgacacccag cactatggcg tgacagtgcc ccataccacc 540
agagcaagaa gaagccagga gagtgatggt gttgaataca ttttcatttc caagcatttg 600
tttgagacag atgtacaaaa taacaagttt attgaatatg gagaatataa aaacaactac 660
tacggcacaa gtatagactc agttcggtct gtccttgcta aaaacaaagt ttgtttgttg 720
gatgttcagc ctcatacagt gaagcattta aggacactag aatttaagcc ctatgtgata 780
tttataaagc ctccatcaat agagcgtttg agagaaacaa gaaaaaatgc aaagattatt 840
tcaagcagag atgaccaagg tgctgcaaaa cccttcacag aagaagattt tcaagaaatg 900
attaaatctg cacagataat ggaaagtcaa tatggtcatc tttttgacaa aattataata 960
aatgatgacc tcactgtggc attcaaaaaa aaaaaaaaaa aaaaaaaa 1008

<210> 40
<211> 336
<212> PRT
<213> homo sapiens

<400> 40
Met Lys Leu Phe Phe Gln Met Phe Ile Lys Ala Leu Phe Asp Tyr Asn
1 5 10 15
Pro Asn Glu Asp Lys Ala Ile Pro Cys Lys Glu Ala Gly Leu Ser Phe
20 25 30
Lys Lys Gly Asp Ile Leu Gln Ile Met Ser Gln Asp Asp Ala Thr Trp
35 40 45
Trp Gln Ala Lys His Glu Ala Asp Ala Asn Pro Arg Ala Gly Leu Ile
50 55 60
Pro Ser Lys His Phe Gln Glu Arg Arg Leu Ala Leu Arg Arg Pro Glu
65 70 75 80
Ile Leu Val Gln Pro Leu Lys Val Ser Asn Arg Lys Ser Ser Gly Phe
85 90 95
Arg Arg Ser Phe Arg Leu Ser Arg Lys Asp Lys Lys Thr Asn Lys Ser
100 105 110
Met Tyr Glu Cys Lys Lys Ser Asp Gln Tyr Asp Thr Ala Asp Val Pro
115 120 125
Thr Tyr Glu Glu Val Thr Pro Tyr Arg Arg Gln Thr Asn Glu Lys Tyr
130 135 140
Arg Leu Val Val Leu Val Gly Pro Val Gly Val Gly Leu Asn Glu Leu
145 150 155 160
Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly Val Thr Val
165 170 175
Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp Gly Val Glu
180 185 190
Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val Gln Asn Asn
195 200 205
Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr Gly Thr Ser
210 215 220
Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val Cys Leu Leu
225 230 235 240
Asp Val Gln Pro His Thr Val Lys His Leu Arg Thr Leu Glu Phe Lys
245 250 255
Pro Tyr Val Ile Phe Ile Lys Pro Pro Ser Ile Glu Arg Leu Arg Glu
260 265 270
Thr Arg Lys Asn Ala Lys Ile Ile Ser Ser Arg Asp Asp Gln Gly Ala
275 280 285
Ala Lys Pro Phe Thr Glu Glu Asp Phe Gln Glu Met Ile Lys Ser Ala
290 295 300
Gln Ile Met Glu Ser Gln Tyr Gly His Leu Phe Asp Lys Ile Ile Ile
305 310 315 320
Asn Asp Asp Leu Thr Val Ala Phe Lys Lys Lys Lys Lys Lys Lys Lys
325 330 335

<210> 41
<211> 636
<212> DNA
<213> homo sapiens

<400> 41
atgtgctgcc caaagactgc ttgcagaggt cccgtgggag tagggctgaa tgaactgaaa 60
cgaaagctgc tgatcagtga cacccagcac tatggcgtga cagtgcccca taccaccaga 120
gcaagaagaa gccaggagag tgatggtgtt gaatacattt tcatttccaa gcatttgttt 180
gagacagatg tacaaaataa caagtttatt gaatatggag aatataaaaa caactactac 240
ggcacaagta tagactcagt tcggtctgtc cttgctaaaa acaaagtttg tttgttggat 300
gttcagcctc atacagtgaa gcatttaagg acactagaat ttaagcccta tgtgatattt 360
ataaagcctc catcaataga gcgtttgaga gaaacaagaa aaaatgcaaa gattatttca 420
agcagagatg accaaggtgc tgcaaaaccc ttcacagaag aagattttca agaaatgatt 480
aaatctgcac agataatgga aagtcaatat ggtcatcttt ttgacaaaat tataataaat 540
gatgacctca ctgtggcatt caatgagctc aaaacaactt ttgacaaatt agagacagag 600
acccattggg tgccagtgag ctggttacat tcataa 636

<210> 42
<211> 211
<212> PRT
<213> homo sapiens

<400> 42
Met Cys Cys Pro Lys Thr Ala Cys Arg Gly Pro Val Gly Val Gly Leu
1 5 10 15
Asn Glu Leu Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly
20 25 30
Val Thr Val Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp
35 40 45
Gly Val Glu Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val
50 55 60
Gln Asn Asn Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr
65 70 75 80
Gly Thr Ser Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val
85 90 95
Cys Leu Leu Asp Val Gln Pro His Thr Val Lys His Leu Arg Thr Leu
100 105 110
Glu Phe Lys Pro Tyr Val Ile Phe Ile Lys Pro Pro Ser Ile Glu Arg
115 120 125
Leu Arg Glu Thr Arg Lys Asn Ala Lys Ile Ile Ser Ser Arg Asp Asp
130 135 140
Gln Gly Ala Ala Lys Pro Phe Thr Glu Glu Asp Phe Gln Glu Met Ile
145 150 155 160
Lys Ser Ala Gln Ile Met Glu Ser Gln Tyr Gly His Leu Phe Asp Lys
165 170 175
Ile Ile Ile Asn Asp Asp Leu Thr Val Ala Phe Asn Glu Leu Lys Thr
180 185 190
Thr Phe Asp Lys Leu Glu Thr Glu Thr His Trp Val Pro Val Ser Trp
195 200 205
Leu His Ser
210

<210> 43
<211> 723
<212> DNA
<213> homo sapiens

<400> 43
atgtatgaat gcaagaagag tgatcagtac gacacagctg acgtacccac atacgaagaa 60
gtgacaccgt atcggcgaca aactaatgaa aaatacagac tcgttgtctt ggttggtccc 120
gtgggagtag ggctgaatga actgaaacga aagctgctga tcagtgacac ccagcactat 180
ggcgtgacag tgccccatac caccagagca agaagaagcc aggagagtga tggtgttgaa 240
tacattttca tttccaagca tttgtttgag acagatgtac aaaataacaa gtttattgaa 300
tatggagaat ataaaaacaa ctactacggc acaagtatag actcagttcg gtctgtcctt 360
gctaaaaaca aagtttgttt gttggatgtt cagcctcata cagtgaagca tttaaggaca 420
ctagaattta agccctatgt gatatttata aagcctccat caatagagcg tttgagagaa 480
acaagaaaaa atgcaaagat tatttcaagc agagatgacc aaggtgctgc aaaacccttc 540

acagaagaag attttcaaga aatgattaaa tctgcacaga taatggaaag tcaatatggt 600
catctttttg acaaaattat aataaatgat gacctcactg tggcattcaa tgagctcaaa 660
acaacttttg acaaattaga gacagagacc cattgggtgc cagtgagctg gttacattca 720
taa 723

<210> 44
<211> 240
<212> PRT
<213> homo sapiens

<400> 44
Met Tyr Glu Cys Lys Lys Ser Asp Gln Tyr Asp Thr Ala Asp Val Pro
1 5 10 15
Thr Tyr Glu Glu Val Thr Pro Tyr Arg Arg Gln Thr Asn Glu Lys Tyr
20 25 30
Arg Leu Val Val Leu Val Gly Pro Val Gly Val Gly Leu Asn Glu Leu
35 40 45
Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly Val Thr Val
50 55 60
Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp Gly Val Glu
65 70 75 80
Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val Gln Asn Asn
85 90 95
Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr Gly Thr Ser
100 105 110
Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val Cys Leu Leu
115 120 125
Asp Val Gln Pro His Thr Val Lys His Leu Arg Thr Leu Glu Phe Lys
130 135 140
Pro Tyr Val Ile Phe Ile Lys Pro Pro Ser Ile Glu Arg Leu Arg Glu
145 150 155 160
Thr Arg Lys Asn Ala Lys Ile Ile Ser Ser Arg Asp Asp Gln Gly Ala
165 170 175
Ala Lys Pro Phe Thr Glu Glu Asp Phe Gln Glu Met Ile Lys Ser Ala
180 185 190
Gln Ile Met Glu Ser Gln Tyr Gly His Leu Phe Asp Lys Ile Ile Ile
195 200 205
Asn Asp Asp Leu Thr Val Ala Phe Asn Glu Leu Lys Thr Thr Phe Asp
210 215 220
Lys Leu Glu Thr Glu Thr His Trp Val Pro Val Ser Trp Leu His Ser
225 230 235 240

<210> 45
<211> 1731
<212> DNA
<213> homo sapiens

<400> 45
atgccagctt tgtcaacggg atctgggagt gacactggtc tgtatgagct gttggctgct 60
ctgccagccc agctgcagcc acatgtggat agccaggaag acctgacctt cctctgggat 120
atgtttggtg aaaaaagcct gcattcattg gtaaagattc atgaaaaact acactactat 180
gagaagcaga gtccggtgcc cattctccat ggtgcggcgg ccttggccga tgatctggcc 240
gaagagcttc agaacaagcc attaaacagt gagatcagag agctgttgaa actactgtca 300
aaacccaatg tgaaggcttt gctctctgta catgatactg tggctcagaa gaattacgac 360
ccagtgttgc ctcctatgcc tgaagatatt gacgatgagg aagactcagt aaaaataatc 420
cgtctggtca aaaatagaga accactggga gctaccatta agaaggatga acagaccggg 480
gcgatcattg tggccagaat catgagagga ggagctgcag atagaagtgg tcttattcat 540
gttggtgatg aacttaggga agtcaacggg ataccagtgg aggataaaag gcctgaggaa 600
ataatacaga ttttggctca gtctcaggga gcaattacat ttaagattat acccggcagc 660
aaagaggaga caccatcaaa agaaggcaag atgtttatca aagccctctt tgactataat 720
cctaatgagg ataaggcaat tccatgtaag gaagctgggc tttctttcaa aaagggagat 780
attcttcaga ttatgagcca agatgatgca acttggtggc aagcgaaaca cgaagctgat 840
gccaacccca gggcaggctt gatcccctca aagcatttcc aggaaaggag attggctttg 900

agacgaccag aaatattggt tcagcccctg aaagtttcca acaggaaatc atctggtttt 960
agaagaagtt ttcgtcttag tagaaaagat aagaaaacaa ataaatccat gtatgaatgc 1020
aagaagagtg atcagtacga cacagctgac gtacccacat acgaagaagt gacaccgtat 1080
cggcgacaaa ctaatgaaaa atacagactc gttgtcttgg ttggtcccgt gggagtaggg 1140
ctgaatgaac tgaaacgaaa gctgctgatc agtgacaccc agcactatgg cgtgacagtg 1200
ccccatacca ccagagcaag aagaagccag gagagtgatg gtgttgaata cattttcatt 1260
tccaagcatt tgtttgagac agatgtacaa aataacaagt ttattgaata tggagaatat 1320
aaaaacaact actacggcac aagtatagac tcagttcggt ctgtccttgc taaaaacaaa 1380
gtttgtttgt tggatgttca gcctcataca gtgaagcatt taaggacact agaatttaag 1440
ccctatgtga tatttataaa gcctccatca atagagcgtt tgagagaaac aagaaaaaat 1500
gcaaagatta tttcaagcag agatgaccaa ggtgctgcaa aacccttcac agaagaagat 1560
tttcaagaaa tgattaaatc tgcacagata atggaaagtc aatatggtca tctttttgac 1620
aaaattataa taaatgatga cctcactgtg gcattcaatg agctcaaaac aacttttgac 1680
aaattagaga cagagaccca ttgggtgcca gtgagctggt tacattcata a 1731

<210> 46
<211> 576
<212> PRT
<213> homo sapiens

<400> 46
Met Pro Ala Leu Ser Thr Gly Ser Gly Ser Asp Thr Gly Leu Tyr Glu
1 5 10 15
Leu Leu Ala Ala Leu Pro Ala Gln Leu Gln Pro His Val Asp Ser Gln
20 25 30
Glu Asp Leu Thr Phe Leu Trp Asp Met Phe Gly Glu Lys Ser Leu His
35 40 45
Ser Leu Val Lys Ile His Glu Lys Leu His Tyr Tyr Glu Lys Gln Ser
50 55 60
Pro Val Pro Ile Leu His Gly Ala Ala Ala Leu Ala Asp Asp Leu Ala
65 70 75 80
Glu Glu Leu Gln Asn Lys Pro Leu Asn Ser Glu Ile Arg Glu Leu Leu
85 90 95
Lys Leu Leu Ser Lys Pro Asn Val Lys Ala Leu Leu Ser Val His Asp
100 105 110
Thr Val Ala Gln Lys Asn Tyr Asp Pro Val Leu Pro Pro Met Pro Glu
115 120 125
Asp Ile Asp Asp Glu Glu Asp Ser Val Lys Ile Ile Arg Leu Val Lys
130 135 140
Asn Arg Glu Pro Leu Gly Ala Thr Ile Lys Lys Asp Glu Gln Thr Gly
145 150 155 160
Ala Ile Ile Val Ala Arg Ile Met Arg Gly Gly Ala Ala Asp Arg Ser
165 170 175
Gly Leu Ile His Val Gly Asp Glu Leu Arg Glu Val Asn Gly Ile Pro
180 185 190
Val Glu Asp Lys Arg Pro Glu Glu Ile Ile Gln Ile Leu Ala Gln Ser
195 200 205
Gln Gly Ala Ile Thr Phe Lys Ile Ile Pro Gly Ser Lys Glu Glu Thr
210 215 220
Pro Ser Lys Glu Gly Lys Met Phe Ile Lys Ala Leu Phe Asp Tyr Asn
225 230 235 240
Pro Asn Glu Asp Lys Ala Ile Pro Cys Lys Glu Ala Gly Leu Ser Phe
245 250 255
Lys Lys Gly Asp Ile Leu Gln Ile Met Ser Gln Asp Asp Ala Thr Trp
260 265 270
Trp Gln Ala Lys His Glu Ala Asp Ala Asn Pro Arg Ala Gly Leu Ile
275 280 285
Pro Ser Lys His Phe Gln Glu Arg Arg Leu Ala Leu Arg Arg Pro Glu
290 295 300
Ile Leu Val Gln Pro Leu Lys Val Ser Asn Arg Lys Ser Ser Gly Phe
305 310 315 320
Arg Arg Ser Phe Arg Leu Ser Arg Lys Asp Lys Lys Thr Asn Lys Ser
325 330 335

```
Met Tyr Glu Cys Lys Lys Ser Asp Gln Tyr Asp Thr Ala Asp Val Pro
            340                 345                 350
Thr Tyr Glu Glu Val Thr Pro Tyr Arg Arg Gln Thr Asn Glu Lys Tyr
        355                 360                 365
Arg Leu Val Val Leu Val Gly Pro Val Gly Val Gly Leu Asn Glu Leu
    370                 375                 380
Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly Val Thr Val
385                 390                 395                 400
Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp Gly Val Glu
                405                 410                 415
Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val Gln Asn Asn
            420                 425                 430
Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr Gly Thr Ser
        435                 440                 445
Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val Cys Leu Leu
    450                 455                 460
Asp Val Gln Pro His Thr Val Lys His Leu Arg Thr Leu Glu Phe Lys
465                 470                 475                 480
Pro Tyr Val Ile Phe Ile Lys Pro Pro Ser Ile Glu Arg Leu Arg Glu
                485                 490                 495
Thr Arg Lys Asn Ala Lys Ile Ile Ser Ser Arg Asp Asp Gln Gly Ala
            500                 505                 510
Ala Lys Pro Phe Thr Glu Glu Asp Phe Gln Glu Met Ile Lys Ser Ala
        515                 520                 525
Gln Ile Met Glu Ser Gln Tyr Gly His Leu Phe Asp Lys Ile Ile Ile
    530                 535                 540
Asn Asp Asp Leu Thr Val Ala Phe Asn Glu Leu Lys Thr Thr Phe Asp
545                 550                 555                 560
Lys Leu Glu Thr Glu Thr His Trp Val Pro Val Ser Trp Leu His Ser
                565                 570                 575
```

<210> 47
<211> 1059
<212> DNA
<213> homo sapiens

<400> 47
atgaaacttt tcttccagat gtttatcaaa gccctctttg actataatcc taatgaggat 60
aaggcaattc catgtaagga agctgggctt tctttcaaaa agggagatat tcttcagatt 120
atgagccaag atgatgcaac ttggtggcaa gcgaaacacg aagctgatgc caaccccagg 180
gcaggcttga tcccctcaaa gcatttccag gaaaggagat tggctttgag acgaccagaa 240
atattggttc agcccctgaa agtttccaac aggaaatcat ctggttttag aagaagtttt 300
cgtcttagta gaaaagataa gaaaacaaat aaatccatgt atgaatgcaa gaagagtgat 360
cagtacgaca cagctgacgt acccacatac gaagaagtga caccgtatcg gcgacaaact 420
aatgaaaaat acagactcgt tgtcttggtt ggtcccgtgg gagtagggct gaatgaactg 480
aaacgaaagc tgctgatcag tgacacccag cactatggcg tgacagtgcc ccataccacc 540
agagcaagaa gaagccagga gagtgatggt gttgaataca ttttcatttc caagcatttg 600
tttgagacag atgtacaaaa taacaagttt attgaatatg gagaatataa aaacaactac 660
tacggcacaa gtatagactc agttcggtct gtccttgcta aaaacaaagt ttgtttgttg 720
gatgttcagc ctcatacagt gaagcattta aggacactag aatttaagcc ctatgtgata 780
tttataaagc ctccatcaat agagcgtttg agagaaacaa gaaaaaatgc aaagattatt 840
tcaagcagag atgaccaagg tgctgcaaaa cccttcacag aagaagattt tcaagaaatg 900
attaaatctg cacagataat ggaaagtcaa tatggtcatc tttttgacaa aattataata 960
aatgatgacc tcactgtggc attcaatgag ctcaaaacaa cttttgacaa attagagaca 1020
gagacccatt gggtgccagt gagctggtta cattcataa 1059

<210> 48
<211> 352
<212> PRT
<213> homo sapiens

<400> 48
Met Lys Leu Phe Phe Gln Met Phe Ile Lys Ala Leu Phe Asp Tyr Asn

```
 1               5                  10                  15
Pro Asn Glu Asp Lys Ala Ile Pro Cys Lys Glu Ala Gly Leu Ser Phe
            20                  25                  30
Lys Lys Gly Asp Ile Leu Gln Ile Met Ser Gln Asp Asp Ala Thr Trp
        35                  40                  45
Trp Gln Ala Lys His Glu Ala Asp Ala Asn Pro Arg Ala Gly Leu Ile
    50                  55                  60
Pro Ser Lys His Phe Gln Glu Arg Arg Leu Ala Leu Arg Arg Pro Glu
65                  70                  75                  80
Ile Leu Val Gln Pro Leu Lys Val Ser Asn Arg Lys Ser Ser Gly Phe
                85                  90                  95
Arg Arg Ser Phe Arg Leu Ser Arg Lys Asp Lys Lys Thr Asn Lys Ser
            100                 105                 110
Met Tyr Glu Cys Lys Lys Ser Asp Gln Tyr Asp Thr Ala Asp Val Pro
        115                 120                 125
Thr Tyr Glu Glu Val Thr Pro Tyr Arg Arg Gln Thr Asn Glu Lys Tyr
    130                 135                 140
Arg Leu Val Val Leu Val Gly Pro Val Gly Val Gly Leu Asn Glu Leu
145                 150                 155                 160
Lys Arg Lys Leu Leu Ile Ser Asp Thr Gln His Tyr Gly Val Thr Val
                165                 170                 175
Pro His Thr Thr Arg Ala Arg Arg Ser Gln Glu Ser Asp Gly Val Glu
            180                 185                 190
Tyr Ile Phe Ile Ser Lys His Leu Phe Glu Thr Asp Val Gln Asn Asn
        195                 200                 205
Lys Phe Ile Glu Tyr Gly Glu Tyr Lys Asn Asn Tyr Tyr Gly Thr Ser
    210                 215                 220
Ile Asp Ser Val Arg Ser Val Leu Ala Lys Asn Lys Val Cys Leu Leu
225                 230                 235                 240
Asp Val Gln Pro His Thr Val Lys His Leu Arg Thr Leu Glu Phe Lys
                245                 250                 255
Pro Tyr Val Ile Phe Ile Lys Pro Pro Ser Ile Glu Arg Leu Arg Glu
            260                 265                 270
Thr Arg Lys Asn Ala Lys Ile Ile Ser Ser Arg Asp Asp Gln Gly Ala
        275                 280                 285
Ala Lys Pro Phe Thr Glu Glu Asp Phe Gln Glu Met Ile Lys Ser Ala
    290                 295                 300
Gln Ile Met Glu Ser Gln Tyr Gly His Leu Phe Asp Lys Ile Ile Ile
305                 310                 315                 320
Asn Asp Asp Leu Thr Val Ala Phe Asn Glu Leu Lys Thr Thr Phe Asp
                325                 330                 335
Lys Leu Glu Thr Glu Thr His Trp Val Pro Val Ser Trp Leu His Ser
            340                 345                 350
```

<210> 49
<211> 1906
<212> DNA
<213> homo sapiens

<400> 49

```
tgcccgcgga ccgcggcagc ccagagcaga aacggcttac aaaatataca gatcttggta      60
gacaacgtgg ctgcaggctg ttgaattgga attccctgtg gctgtccgaa ggcagggtgt     120
ccggagagcg gtgggctgac ctgttcctac accttgcatc atgccagctt tgtcaacggg     180
atctgggagt gacactggtc tgtatgagct gttggctgct ctgccagccc agctgcagcc     240
acatgtggat agccaggaag acctgacctt cctctgggat atgtttggtg aaaaaagcct     300
gcattcattg gtaaagattc atgaaaaact acactactat gagaagcaga gtccggtgcc     360
cattctccat ggtgcggcgg ccttggccga tgatctggcc gaagagcttc agaacaagcc     420
attaaacagt gagatcagag agctgttgaa actactgtca aaacccaatg tgaaggcttt     480
gctctctgta catgatactg tggctcagaa gaattacgac ccagtgttgc ctcctatgcc     540
tgaagatatt gacgatgagg aagactcagt aaaaataatc cgtctggtca aaaatagaga     600
accactggga gctaccatta agaaggatga acagaccggg gcgatcattg tggccagaat     660
catgagagga ggagctgcag atagaagtgg tcttattcat gttggtgatg aacttaggga     720
agtcaacggg ataccagtgg aggataaaag gcctgaggaa ataatacaga ttttggctca     780
```

gtctcaggga gcaattacat ttaagattat acccggcagc aaagaggaga caccatcaaa 840
agaaggcaag atgtttatca aagccctctt tgactataat cctaatgagg ataaggcaat 900
tccatgtaag gaagctgggc tttctttcaa aaagggagat attcttcaga ttatgagcca 960
agatgatgca acttggtggc aagcgaaaca cgaagctgat gccaacccca gggcaggctt 1020
gatcccctca aagcatttcc aggaaaggag attggctttg agacgaccag aaatattggt 1080
tcagcccctg aaagtttcca acaggaaatc atctggtttt agaagaagtt ttcgtcttag 1140
tagaaaagat aagaaaacaa ataaatccat gtatgaatgc aagaagagtg atcagtacga 1200
cacagctgac gtacccacat acgaagaagt gacaccgtat cggcgacaaa ctaatgaaaa 1260
atacagactc gttgtcttgg ttggtcccgt gggagtaggg ctgaatgaac tgaaacgaaa 1320
gctgctgatc agtgacaccc agcactatgg cgtgacagtg ccccatacca ccagagcaag 1380
aagaagccag gagagtgatg gtgttgaata cattttcatt tccaagcatt tgtttgagac 1440
agatgtacaa aataacaagt ttattgaata tggagaatat aaaaacaact actacggcac 1500
aagtatagac tcagttcggt ctgtccttgc taaaaacaaa gtttgtttgt tggatgttca 1560
gcctcataca gtgaagcatt taaggacact agaatttaag ccctatgtga tatttataaa 1620
gcctccatca atagagcgtt tgagagaaac aagaaaaaat gcaaagatta tttcaagcag 1680
agatgaccaa ggtgctgcaa aacccttcac agaagaagat tttcaagaaa tgattaaatc 1740
tgcacagata atggaaagtc aatatggtca tctttttgac aaaattataa taaatgatga 1800
cctcactgtg gcattcaatg agctcaaaac aacttttgac aaattagaga cagagaccca 1860
ttgggtgcca gtgagctggt tacattcata acttaaaaaa aaaaaa 1906

<210> 50
<211> 5426
<212> DNA
<213> homo sapiens

<400> 50
cattcgctcc agggttttgg gaccctaggt tgcggagtcc ttaccctacc ctggcctctc 60
gagcagttgt ccccataact cggaatctag agccgctgtt gcgaggcagg agcacgtggc 120
agtcaagtag cttcccagtc ccgaacgccg cccgtcccca ccccgccgtg gccactagca 180
acgacctctg tgaagttgga gaggcggtaa cggaggcact ccccctgctg caccccgccg 240
tttctacggg gctcagaaac cagtttgttt gtttcgtcgg ggtagtgtcg acctgtctta 300
cgggcgtcgc ccgagacagg acggagtcaa acccgtggta tcaactgaag acgagtgtca 360
ggatgtcatt ttcaaaatgc gggatggtac ctctgcttta ttaagccccg taggaagact 420
gccacaccta gactgatgct tattagtcat caccgttatt cctactaacg tcctgtgtca 480
ctgagttttt taaatgtcta gcatatctgt aaagatgcct tagaaaaaga atcatggaga 540
agtatgttag actacagaag attggagaag gttcatttgg aaaagccatt cttgttaaat 600
ctacagaaga tggcagacag tatgttatca aggaaattaa catctcaaga atgtccagta 660
aagaaagaga agaatcaagg agagaagttg cagtattggc aaacatgaag catccaaata 720
ttgtccagta tagagaatca tttgaagaaa atggctctct ctacatagta atggattact 780
gtgagggagg ggatctgttt aagcgaataa atgctcagaa aggcgttttg tttcaagagg 840
atcagatttt ggactggttt gtacagatat gtttggccct gaaacatgta catgatagaa 900
aaattcttca tcgagacatt aaatctcaga acatattttt aactaaagat ggaacagtac 960
aacttggaga ttttggaatt gctagagttc ttaatagtac tgtagagctg gctcgaactt 1020
gcatagggac cccatactac ttgtcacctg aaatctgtga aaacaaacct tacaataata 1080
aaagtgacat ttgggctctg gggtgtgtcc tttatgagct gtgtacactt aaacatgctt 1140
ttgaagctgg cagtatgaaa aacctggtac tgaagataat atctggatct tttccacctg 1200
tgtctttgca ttattcctat gatctccgca gtttggtgtc tcagttattt aaaagaaatc 1260
ctagggatag accatcagtc aactccatat tggagaaagg ttttatagcc aaacgcattg 1320
aaaagtttct ctctcctcag cttattgcag aagaattttg tctaaaaaca ttttcgaagt 1380
ttggatcaca gcctatacca gctaaaagac cagcttcagg acaaaactcg atttctgtta 1440
tgcctgctca gaaaattaca aagcctgccg ctaaatatgg aataccttta gcatataaga 1500
aatatggaga taaaaaatta cacgaaaaga aaccactgca aaaacataaa caggcccatc 1560
aaactccaga gaagagagtg aatactggag aagaaaggag gaaaatatct gaggaagcag 1620
caagaaagag aaggctggaa tttattgaaa aagaaaagaa acaaaaggat cagattatta 1680
gtttaatgaa ggctgaacaa atgaaaaggc aagaaaagga aaggttggaa agaataaata 1740
gggccaggga acaaggatgg agaaatgtgc taagtgctgg tggaagtggt gaagtaaagg 1800
ctccttttct gggcagtgga gggactatag ctccatcatc tttttcttct cgaggacagt 1860
atgaacatta ccatgccatt tttgaccaaa tgcagcaaca aagagcagaa gataatgaag 1920
ctaaatggaa aagagaaata tatggtcgag gtcttccaga aaggcaaaaa gggcagctag 1980
ctgtagaaag agctaaacaa gtagaagagt tcctgcagcg aaaacgggaa gctatgcaga 2040
ataaagctcg agccgaagga catatggttt atctggcaag actgaggcaa ataagactac 2100
agaatttcaa tgagcgccaa cagattaaag ccaaacttcg tggtgaaaag aaagaagcta 2160
atcattctga aggacaagaa ggaagtgaag aggctgacat gaggcgcaaa aaaatcgaat 2220

cactgaaggc ccatgcaaat gcacgtgctg ctgtactaaa agaacaacta gaacgaaaga 2280
gaaaggaggc ttatgagaga gaaaaaaaag tgtgggaaga gcatttggtg gctaaaggag 2340
ttaagagttc tgatgtttct ccacctttgg gacagcatga aacaggtggc tctccatcaa 2400
agcaacagat gagatctgtt atttctgtaa cttcagcttt gaaagaagtt ggcgtggaca 2460
gtagtttaac tgatacccgg gaaacttcag aagagatgca aaagaccaac aatgctattt 2520
caagtaagcg agaaatactt cgcagattaa atgaaaatct taaagctcaa gaagatgaaa 2580
aaggaatgca gaatctctct gatacttttg agataaatgt tcatgaagat gccaaagagc 2640
atgaaaaaga aaaatcagtt tcatctgatc gcaagaagtg ggaggcagga ggtcaacttg 2700
tgattcctct ggatgagtta acactagata catccttctc tacaactgaa agacatacag 2760
tgggagaagt tattaaatta ggtcctaatg gatctccaag aagagcctgg gggaaaagtc 2820
cgacagattc tgttctaaag atacttggag aagctgaact acaacttcag acagaactat 2880
tagaaaatac aactattaga agtgagattt ctcccgaagg ggaaaagtac aaacccttaa 2940
ttactggaga aaaaaaagta caatgtattt cacatgaaat aaacccatca gctattgttg 3000
attctcctgt tgagacaaaa agtcccgagt tcagtgaggc atctccacag atgtcattga 3060
aactggaagg aaatttagaa gaacctgatg atttggaaac agaaattcta caagagccaa 3120
gtggaacaaa caaagatgag agcttgccat gcactattac tgatgtgtgg attagtgagg 3180
aaaaagaaac aaaggaaact cagtcggcag ataggatcac cattcaggaa aatgaagttt 3240
ctgaagatgg agtctcgagt actgtggacc aacttagtga cattcatata gagcctggaa 3300
ccaatgattc tcagcactct aaatgtgatg tagataagtc tgtgcaaccg gaaccatttt 3360
tccataaggt ggttcattct gaacacttga acttagtccc tcaagttcaa tcagttcagt 3420
gttcaccaga agaatccttt gcatttcgat ctcactcgca tttaccacca aaaaataaaa 3480
acaagaattc cttgctgatt ggactttcaa ctggtctgtt tgatgcaaac aacccaaaga 3540
tgttaaggac atgttcactt ccagatctct caaagctgtt cagaaccctt atggatgttc 3600
ccaccgtagg agatgttcgt caagacaatc ttgaaataga tgaaattaaa gatgaaaaca 3660
ttaaagaagg accttctgat tctgaagaca ttgtgtttga agaaactgac acagatttac 3720
aagagctgca ggcctcgatg gaacagttac ttagggaaca acctggtgaa gaatacagtg 3780
aagaagaaga gtcagtcttg aagaacagtg atgtggagcc aactgcaaat gggacagatg 3840
tggcagatga agatgacaat cccagtagtg aaagtgccct gaacgaagaa tggcactcag 3900
ataacagtga tggtgaaatt gctagtgaat gtgaatgcga tagtgtcttt aaccatttag 3960
aggaactgag acttcatctg gagcaggaaa tgggctttga aaaattcttt gaggtttatg 4020
agaaaataaa ggctattcat gaagatgaag atgaaaatat tgaaatttgt tcaaaaatag 4080
ttcaaaatat tttgggaaat gaacatcagc atctttatgc caagattctt catttagtca 4140
tggcagatgg agcctaccaa gaagataatg atgaataatc ctcaaaatgt tttttaatcc 4200
tcaactatat gaaagcattt gaatttggct tatcagaata acaagcttca gtgggaaata 4260
cagcaattat ttatttaaaa aatcagattt aagatggact ttcttattgc atgaaaaaga 4320
tggagaaaca tgccattttt caatgaagat tctaatattt tatctatttt gttcattgaa 4380
ttccatggtt aaatctcata aaatatatac tttattaaat catccaacca aagcatagga 4440
aacattgacc cagaacctga cttaatggtt ttgaagattt actatgcaat agggtaactt 4500
tgagtttcag caaatgtctt taggttgaag gaattaccta tgtcatgaag gacctgtctg 4560
tggtttttca atggagtctt taagcatgat ctttttttctg tctagtactt gttttcattc 4620
tggccagcag ttctacatta aatcaccttg tcaagggctc tgtttacatc tacacatttt 4680
gaagatgaaa tttttagcct taaagtttat attctcaagt ccttttacaa tcagtgtgtc 4740
tcctgaacta gcacacaggc tgtagaaaca gtcttagaaa tcattgaaag atttgattat 4800
gaaagaatag caaaattata tttcttgaca tataaaaagt tggtttaatg cctttatttc 4860
tctttaagga ccagaaccag gaatactgta tcgaaaaatt agtctgtgga tttaacactg 4920
acttagcata tagcttaaag ttgctctttt ggtttttaac ttcctccata cataagcttc 4980
aaggacaata agatgttaaa gaggaggaaa taattatttt tattttgaca ctgtgacagt 5040
tttggtaact aggatcctag ggagggaaat gtttgcctgt tgaacttctt tctgttatga 5100
gaggatttag ttaggtcatt aagatgttga tcacacagct tcaatcacaa tatgccaagt 5160
ataacctggt ttcgttagag gtgtctacag tccagatgtt cttcgtaata aaagcaaagt 5220
ttttgaacct ctgagtccaa agcaggctgg ttggcataat atgtaatttg aaaaataaaa 5280
tcttatcttg cagcactatc agtatgttga atttattatg tatattattt ctaatatccg 5340
aaactaaata cttgattttt taatatgtgt gtttatttta tgatattgct attaaatttt 5400
tattatccaa aaaaaaaaaa aaaaaa 5426